ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

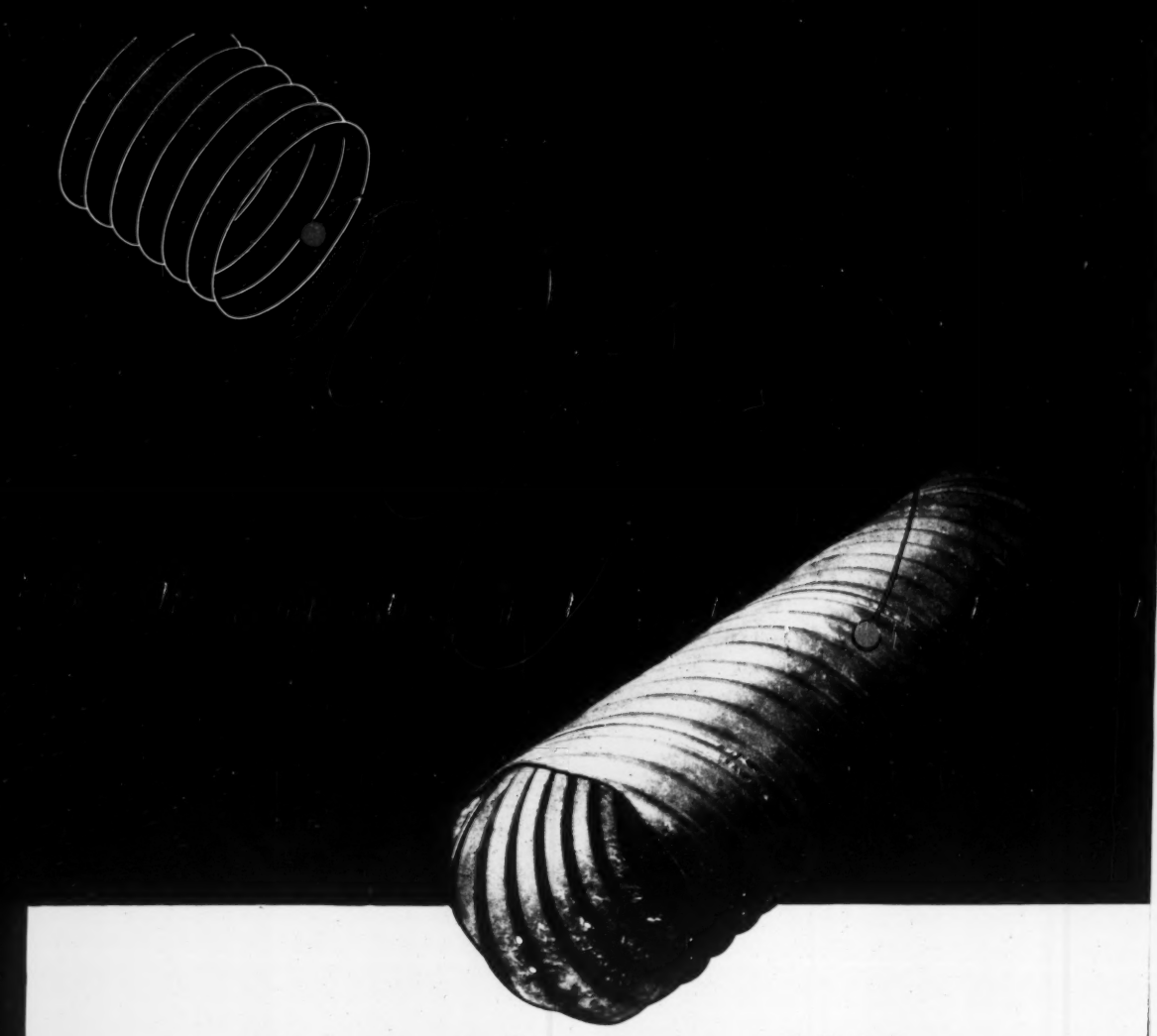
AUGUST 18, 1949

Sludge digesters at Philadelphia's Northeast sewage plant have 110-ft. floating covers (See p. 30)

DRILLING THE NEW ELKHORN TUNNEL

• • •

DERRICKS DO THE JOB AT MEMPHIS



A new twist to an old idea

Corrugated metal pipe had long been known as a low-cost, efficient and dependable drainage structure. Could a new twist be given this old idea to make it even better for certain uses? ARMCO Engineers said: "Yes."

They developed an automatic machine to make corrugated metal pipe by a continuous process. The result was ARMCO HEL-COR—a new kind of pipe with helical corrugations and offering exceptional economy in small diameters. ARMCO HEL-COR Pipe proved ideal for subdrainage and similar applications. It is low in cost to permit extensive use, easy to handle, durable, and has ample corrugated metal strength. No crushing, cracking or disjointing under the impact and vibration of heavy loads. Thousands of installations have brought lower maintenance and greater safety to highways, railways and airports.

Providing better and more economical products to meet specific needs has been standard practice at Armco for more than 40 years. Today you can bring your drainage and construction problems to Armco with full assurance you will receive all the benefits of long experience, extensive research facilities, and a real interest in helping you solve these problems.

Armco has a complete range of engineered products and convenient, authoritative data to help you. If your problem is difficult or unusual why not talk it over with us.

ARMCO

ARMCO DRAINAGE & METAL PRODUCTS, INC.

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SUBSIDIARY OF ARMCO STEEL CORPORATION

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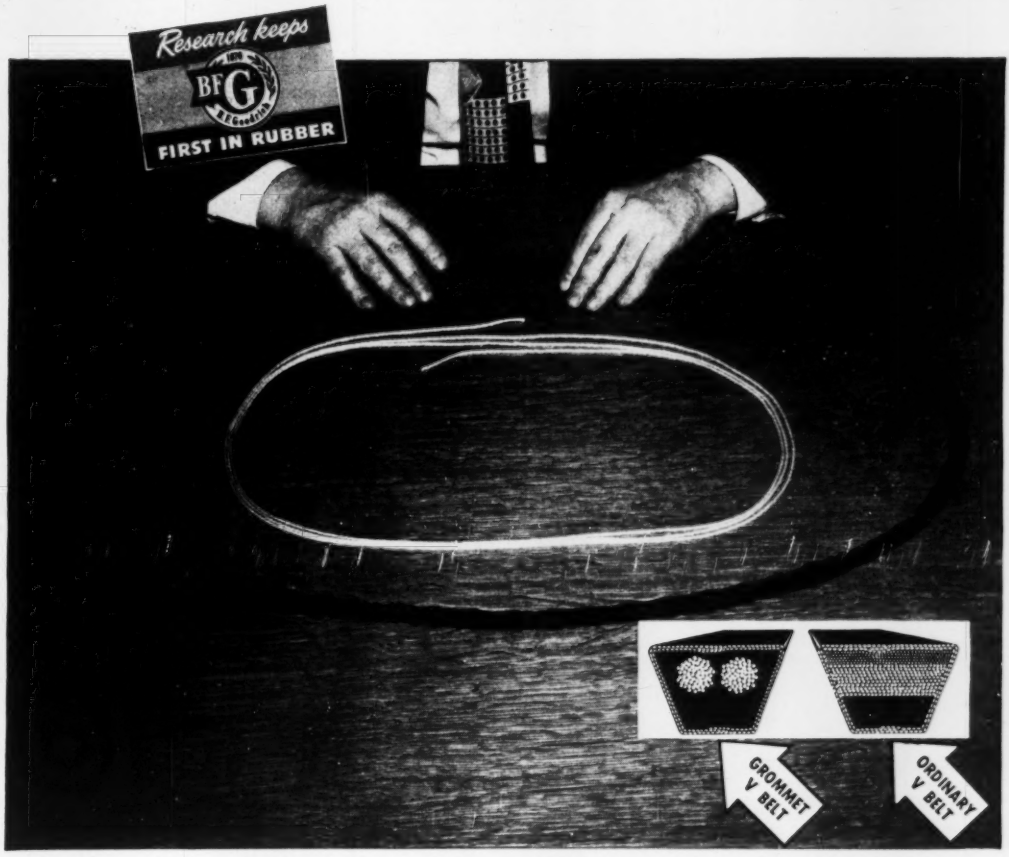

Endless grommet V belts end most cord failures

B. F. Goodrich grommet V belts cut costs 20 to 50%

THAT large loop of cord is a grommet, made by winding heavy cord on itself to form an endless loop. It is one of the twin grommets that make up the cord section of a B. F. Goodrich grommet V belt. The small loop, with the two ends showing, is one of the cords that make up the cord section of an ordinary V belt. Most of the failures in ordinary V belts occur in the region where cord ends overlap. Because the cord in a grommet V belt is in effect endless, such failures are eliminated.

Longer life—Elimination of overlapping cord ends, helps grommet V belts last 20 to 50% longer than ordinary V belts. *Concentrated* cord strength is another reason—all the cord in a B. F. Goodrich grommet V belt is in the twin grommets, each of which is placed close to a driving face of the pulley. This insures maximum power delivery, even load distribution, full use of all cord strength.

Better grip—Because a grommet V belt has no stiff, inflexible overlap section, every part of the belt is equally flexible, gives uniform grip, reduces slip. Size for size, grommet V belts give you ⅓ more gripping power, pull heavier loads, with a higher safety factor. Less heat is generated, cord and adhesion failures are reduced.

No other V belt is a grommet V belt! Twin grommet construction is an exclusive B. F. Goodrich feature—no other V belt has it. Grommet construction is protected by U. S. Patent No. 2,233,294. (Now available in D and E sizes only.) To make sure you get genuine grommet V belts, see your local B. F. Goodrich distributor. *The B. F. Goodrich Company, Industrial and General Products Division, Akron, Ohio.*

Grommet V Belts BY
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ENGINEERING NEWS-RECORD

VOLUME 143 AUGUST 18, 1949 NO. 7

WALDO G. BOWMAN
Editor

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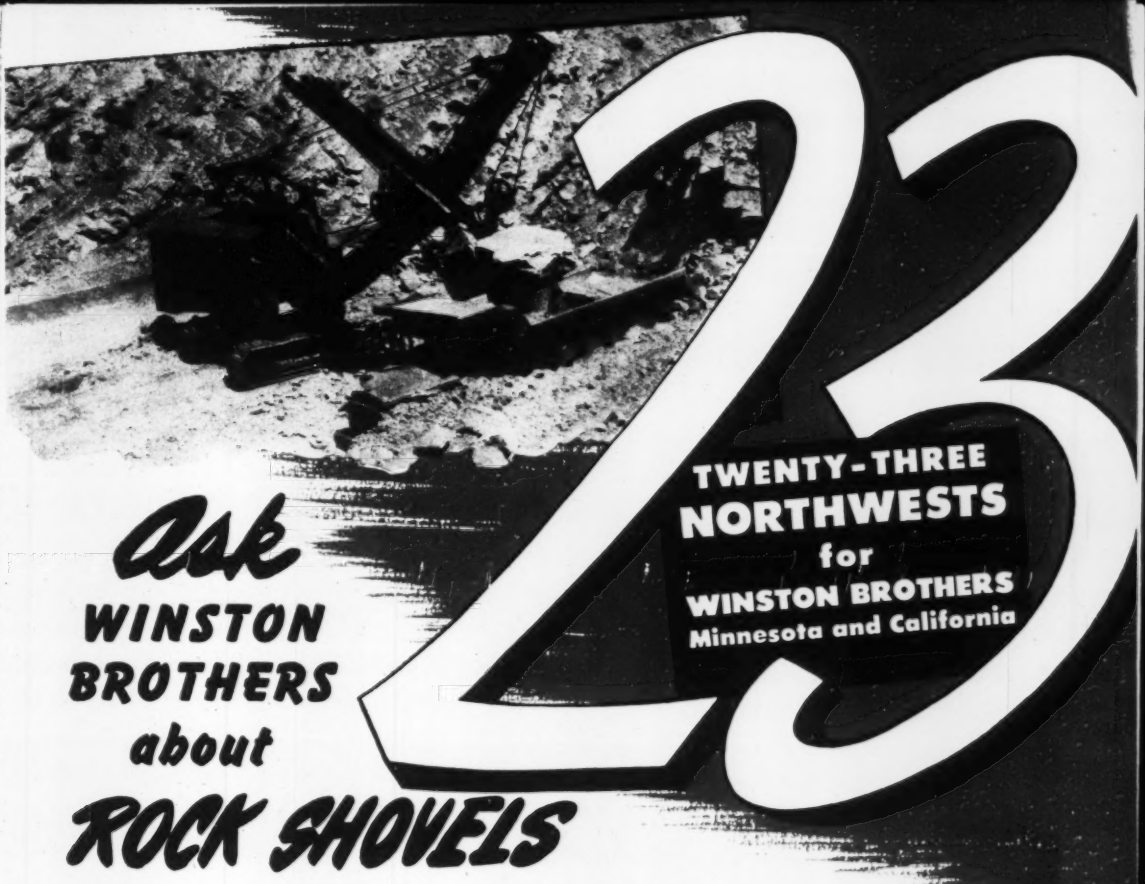

23

TWENTY-THREE NORTHWESTS for WINSTON BROTHERS Minnesota and California

Ask WINSTON BROTHERS about ROCK SHOVELS

Handling Rock is a common, every day problem for Winston Brothers of Minnesota and California. Look at this job! Here is one of Winston Brothers Northwests handling a rock cut and proving it pays to have a *real* Rock Shovel.

Here's a machine that is in the heart of the job—the place where profits begin. Here is where Northwest advantages, Northwest simplicity of design and ease of maintenance, the "Feather-Touch" Clutch Control, Uniform Pressure Swing Clutches, the Cushion Clutch, the Northwest Dual Independent Crowd and other Northwest advantages mean money.

You can't afford anything but the best on work like this and the repeat orders given by successful companies like Winston Brothers are the best possible testimonials to guide you.

If you have a real Rock Shovel you never have to worry about output in any kind of digging. Ask Northwest owners about their output and cost of operation and you'll plan to have a Northwest. Why not place your order and be sure of a *real* Rock Shovel.

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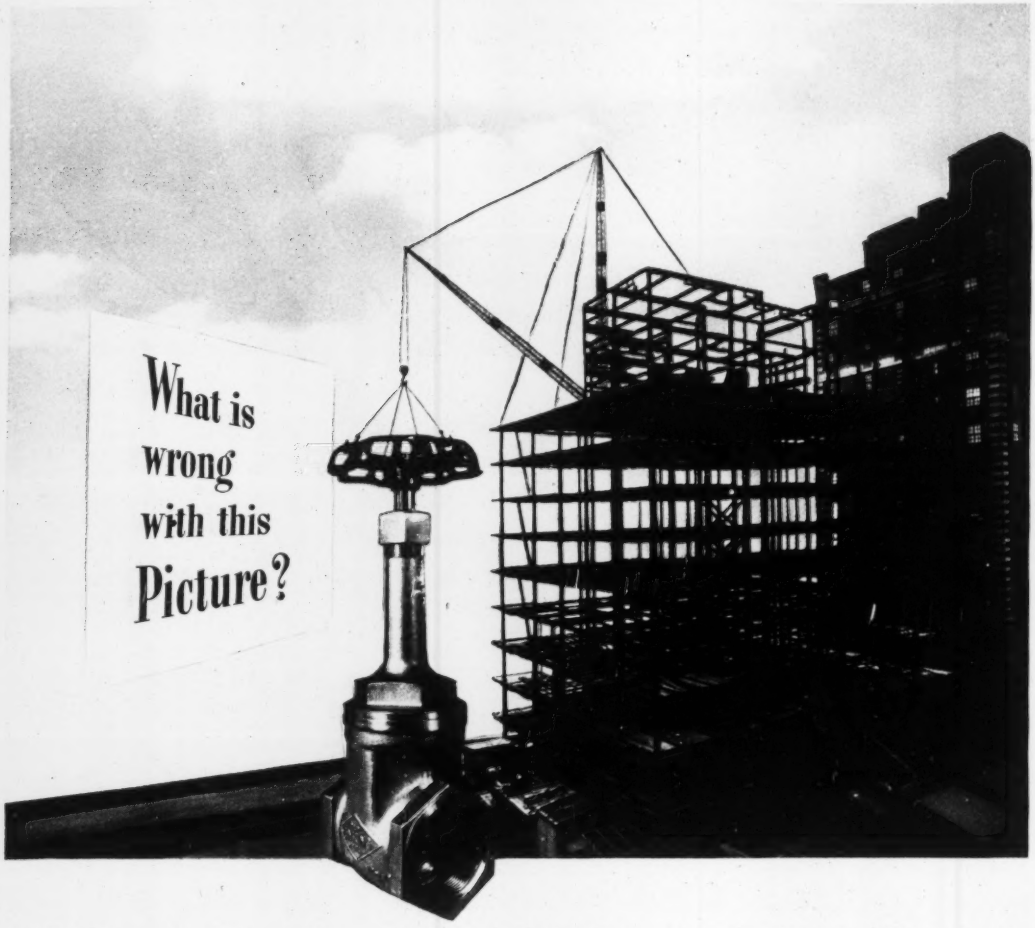

IT'S EASY to see that the size of the valve is out of proportion—but not so much if you think of *all valves* in this building as *one valve*. Collectively, valves represent an investment bigger than the cost of many large units always carefully chosen for operating economy.

● That's why, today, with maintenance wages and material costs higher than ever before, alert management must keep a sharp eye on valve performance.

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For all new installations, for all replacements, rely on Jenkins quality and engineering service for lowest valve costs in the long run. *Sold through leading Industrial Distributors everywhere.*

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design advantages...

in a compact package

COMPARING a big, expensive slow speed diesel with a relatively small low priced diesel may sound like a comparison between a highway bus and a taxicab. But Murphy Diesel—and only Murphy—has succeeded in building into its line of compact engines many of the most important design features that are responsible for the big diesel's reputation for dependability, long life and operating economy.

Foremost among these features is the "true" diesel operating principle—solid fuel injected directly into a plain, open combustion chamber—which makes it possible to get the most power out of every drop of fuel with minimum wear and tear on the engine. "True" diesel operation in the Murphy Diesel is made possible by Murphy's Unit Fuel Injection System which eliminates all high pressure fuel lines and permits the precise control of fuel injection necessary for truly efficient operation.

Get full information, now, and plan to put Murphy's advantages to work for you.

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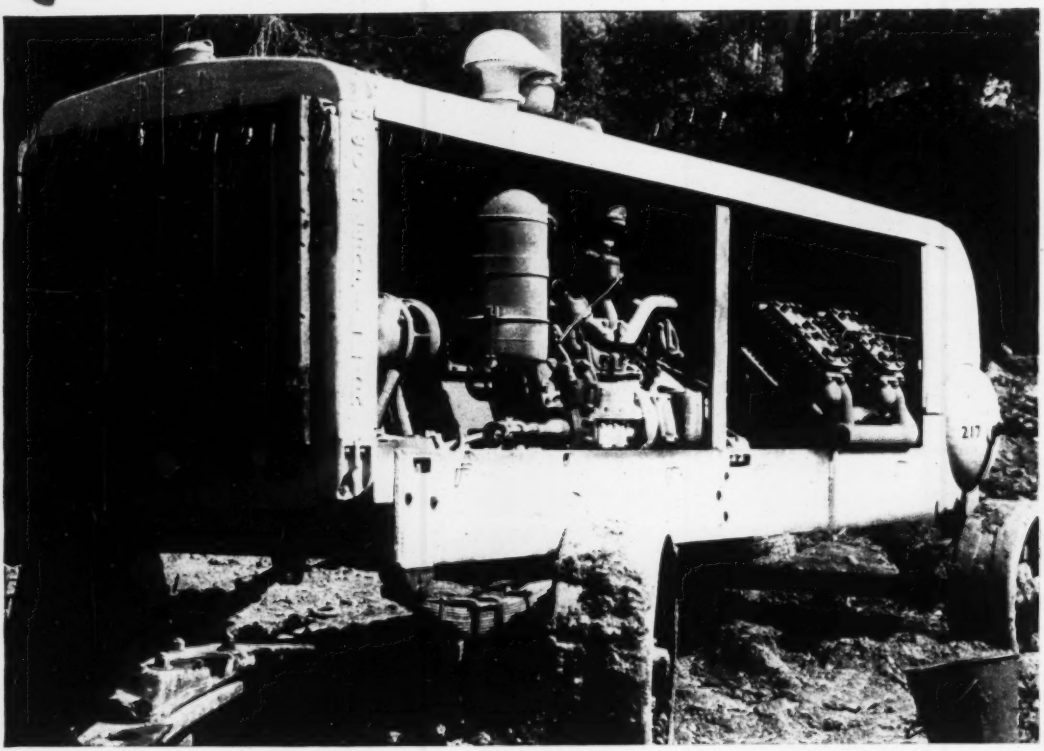
Engines and Power Units 90 to 220 H.P.
Generator Sets 60 to 133 K.W.

Critical Design Features Common to a Typical Big Heavy Duty Slow Speed Diesel and the MURPHY DIESEL

FEATURE	BIG DIESEL	MURPHY DIESEL
Does it have a plain open combustion chamber?	YES	YES
Does it have direct injection of solid fuel?	YES	YES
Are the pistons cooled?	YES	YES
Are cylinder liners removable and replaceable?	YES	YES
Does it have through tie bolts from head to bearing caps?	YES	YES
Are camshafts driven from the flywheel end of the crankshaft?	YES	YES
Does it have a hydraulic servo-type governor?	YES	YES

PROTECT



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A Texaco Lubrication Engineer will gladly help you select the oils you need for best results. Just call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

HOW TO PROTECT OPEN GEARS

Best way to prolong the life of open gears is to lubricate them with the recommended grade of *Texaco Crater X Fluid*. This top-quality lubricant is liquid when applied, but quickly forms a long-lasting, tough film that guards against wear, cushions shocks, quiets noise. Economical to use — easily applied by brushing, spraying or pouring.

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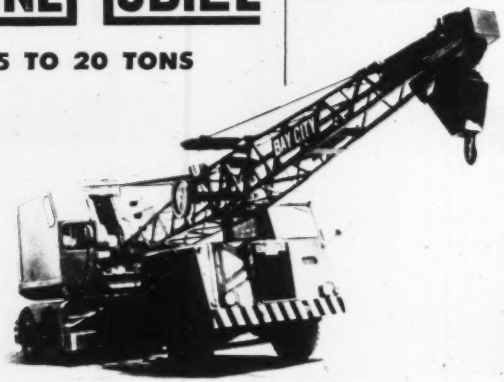

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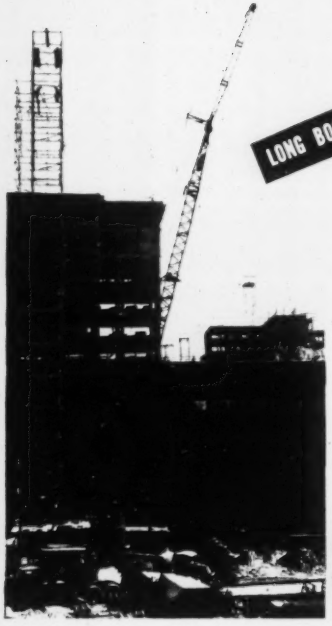

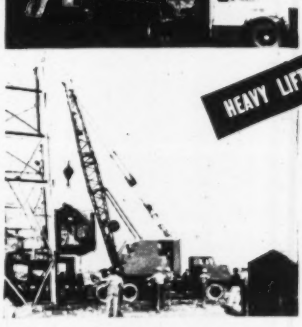

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BAY CITY SHOVELS INC., BAY CITY, MICHIGAN See your nearest Bay City dealer for excavating and material handling equipment in sizes from ⅜ to 1¼ yard with crane rating up to 20 tons. Both crawler and pneumatic tire mountings.

NEWS BRIEFS

What Do You Think—Public comment is being solicited on proposed revisions of the American Standard Safety Code for Elevators, A17. Sections on Buffers, Loading and Moving Stairways. Copies of the drafts are available from the American Society of Mechanical Engineers, 29 W. 39th Street, New York City 18. Suggestions will form the basis for a redraft which will be submitted to the Sectional Committee.

Delaware's Largest—A rental housing development to contain apartments—at a cost of $6,000,920—will be built at Edge Moor, near Wilmington, Del., Regional FHA Director Leo A. Kirk announced last week. Albert D. Lauders is architect for the project, which is to be built in three sections. Work on the first will start this fall.

Costs Really Rose—It'll cost the builders of Meadbrook—Indianapolis' largest housing development—just $750,000 more to finish the job than they'd figured, but the privately-financed project will be completed by Oct. 1. There doesn't seem to be much difficulty in renting the units as they become available.

Tip for the UN?—The Ohio River Valley Water Sanitation Compact might have some lessons for international groups which really want to work together and get something done. That's what a Nebraska educator told the Academy of International Law at The Hague, July 22. The Ohio compact, according to Dr. Willard B. Cowles, "has the strongest teeth of of any American interstate organization and stronger teeth than any international organization with which I'm familiar." The Compact Commission's campaign of "a maximum of persuasion, a minimum of force and plenty of education," Cowles said is as applicable to ever international organization as to his interstate problem.

Second U. N. Contract—On July 26 the United Nations signed a contract with U. S. Steel's American Bridge Co. for the second building in its New York City headquarters group. Under the contract, American Bridge will supply, fabricate and erect the steel for the Meeting Halls Building, and for covering the Franklin D. Roosevelt Drive along the front of the U. N. Headquarters site at the East

(Continued on p. 14)

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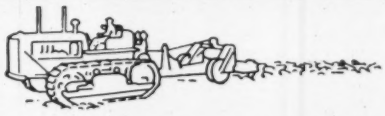

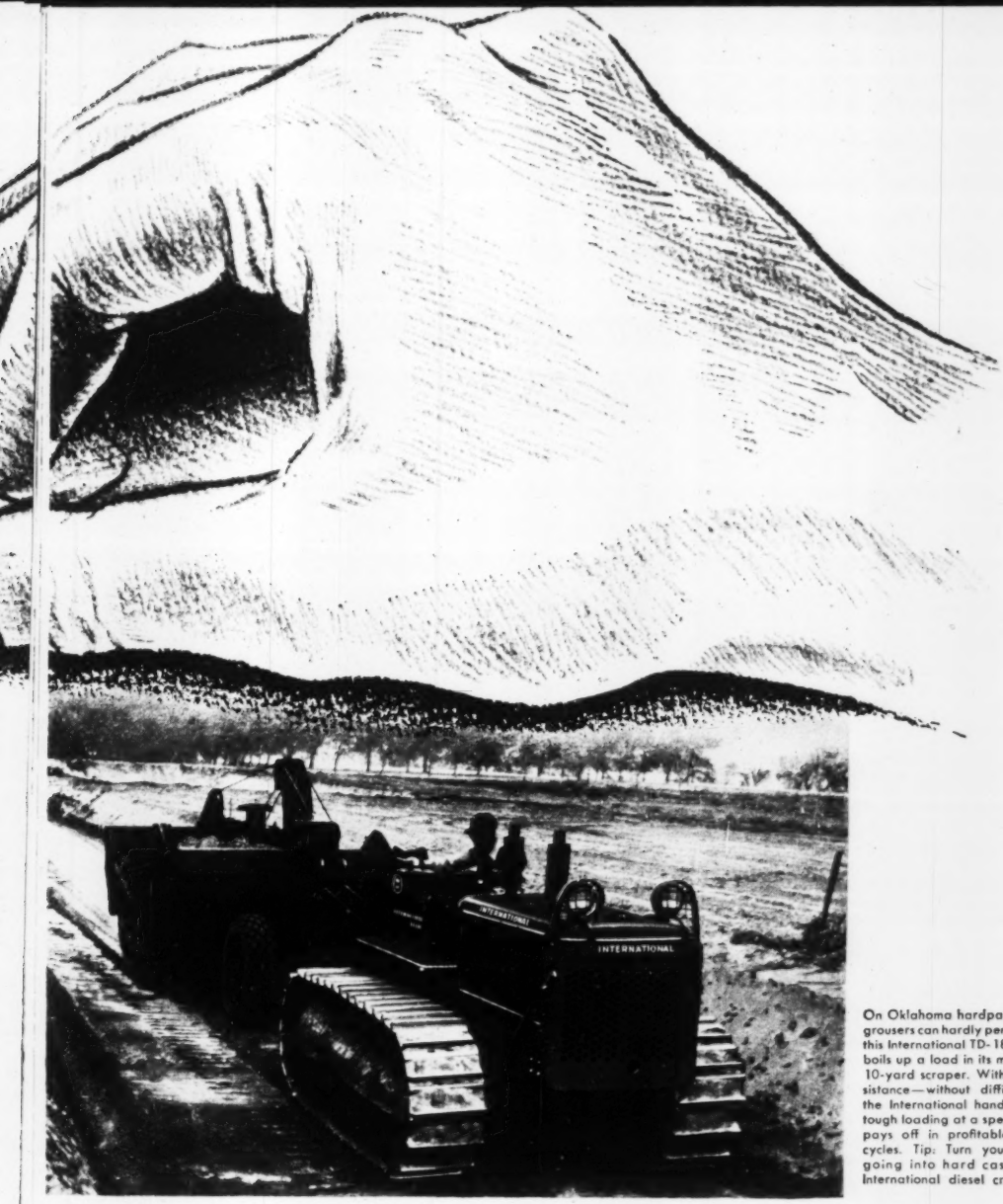

On Oklahoma hardpan which grousers can hardly penetrate, this International TD-18 diesel boils up a load in its matched 10-yard scraper. Without assistance—without difficulty—the International handles this tough loading at a speed that pays off in profitable work cycles. Tip: Turn your hard going into hard cash with International diesel crawlers.

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INTERNATIONAL
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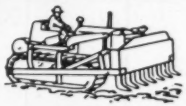
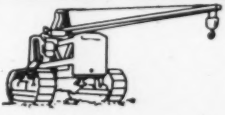

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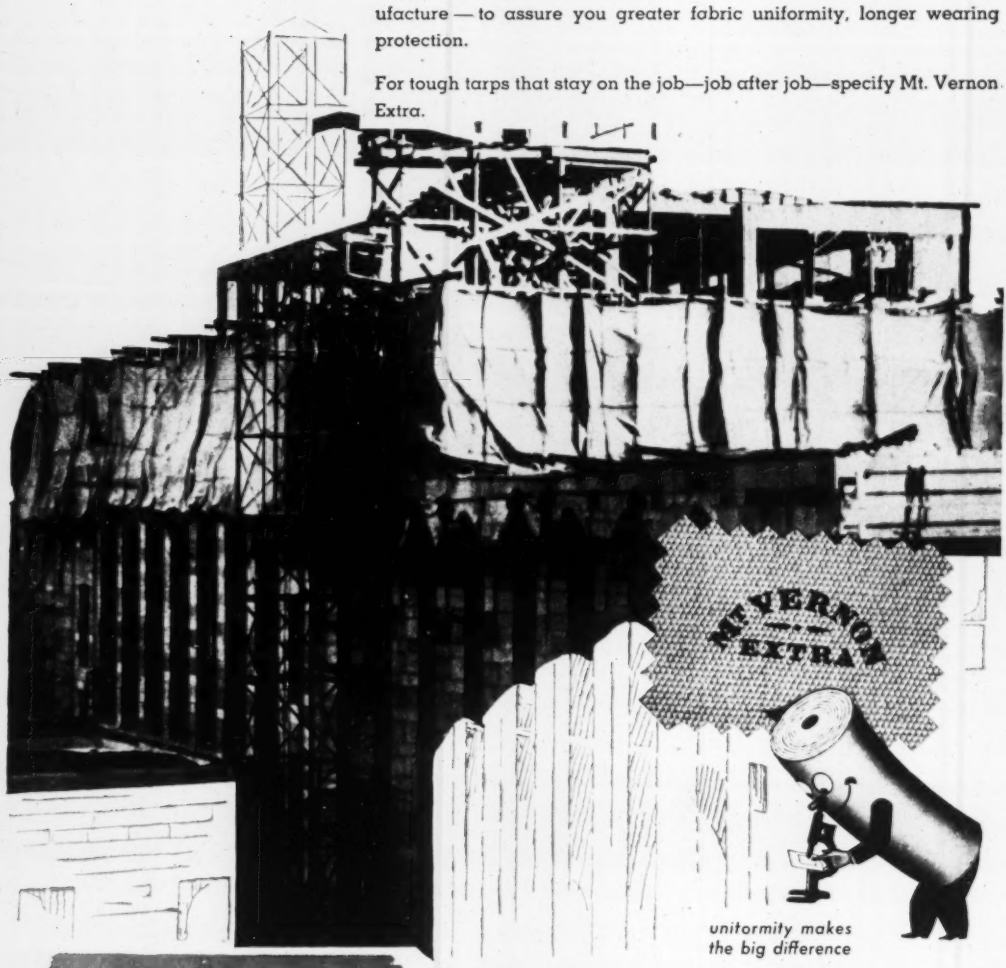

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on **Pennsylvania Turnpike Extension**

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KOPPERS PRESSURE-TREATED WOOD

KOPPERS COMPANY, INC., Pittsburgh 19, Pa.

River. The bridge company has half completed the erection of steel for the U. N. Secretariat Building on the site. The new contract is for 10,500 tons of steel. The total cost is approximately $2,250,000.

Perlite Manufacturers – Eighteen companies manufacturing perlite, a lightweight aggregate used in the building industry, have formed a national trade association, the Perlite Institute, to render services to producers and to the trade in connection with perlite products. Perlite, an obsidian rock found throughout the Rocky Mountains in volcanic regions, is nearly three-fourths silica and contains entrapped water. It is mined or quarried, crushed and expanded by intense heat to make a lightweight, insulating aggregate used in plaster and concrete mixes. Perlite's greatest value lies in its light weight, fire resistance and insulation qualities. Its strength-weight ratio provides an opportunity for great savings in steel and other standard members in heavy construction.

Lincoln Electric Plant—The 20th anniversary of welding in American construction industries was signalized July 27 by ground-breaking for the new $8,500,000 all-welded, single-story plant to which in 1950 the Lincoln Electric Co. will transfer all of its manufacturing of welders and electrodes. The Austin Co. designed and is building the new plant. Structural steel will be fabricated at the Austin Bliss Mill, 3,000 ft. from the site. Austin officials estimate that the use of welding, which eliminates the need for gusset plates and other structural items, has resulted in savings of over 10,000 tons of steel in the last 20 years at the Bliss Mill alone. The new plant will be constructed almost entirely from standard jig-fabricated H-section trusses, as a result of Austin's research in welded design and the application of mass production techniques to steel fabrication.

Houston Airport—A total of $750,000 will be available for improvements to the Houston, Tex., Municipal Airport during the next 12 months—enough to complete work in the northern portion of the field. An administration building will be built there a year later. Houston will furnish $400,000 of the three quarters of a million and the CAA the rest.

S. D. Airport—CAA has approved a $295,829 airport construction and improvement plan for South Dakota on a local-federal matching basis. The development plan for the 1950 fiscal year includes projects at Sioux Falls, Mitchell, Bison, Faith, Isabel, Timberlake.

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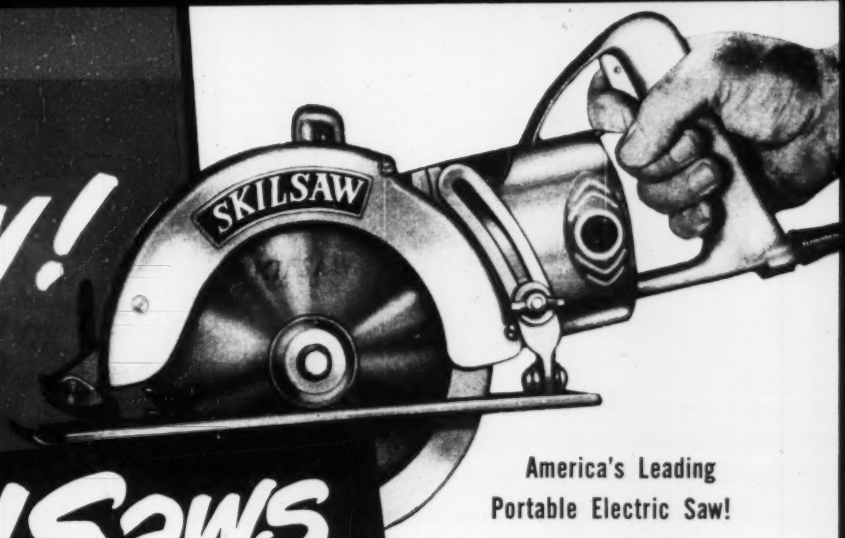

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THE CONSTRUCTION WEEK

EARTHQUAKE ANTICIPATION?—Records of major earthquakes along the San Andreas felt in California have led to a rule-of-thumb theory that they recur in the San Francisco Bay region about "three times in a century." Now that 43 years have elapsed since the 1906 disaster in San Francisco, something more tangible than theory appears in increasing reluctance of some major insurance companies to write earthquake coverage on buildings in the San Francisco and Los Angeles areas. Time and talk have accented apprehension.

STEEL STRIKE SETTLEMENT?—Government labor sources feel more and more certain that a steel wage settlement will precede any report of the fact-finding board which is now at work. The story is that there are a lot of back-stage negotiations going on, that USW's Phil Murray and the steel people are fairly close to a 12-cents-per-hour deal with an agreement to start studying pensions now. The latter would be bargained out next year, not this. Murray, reportedly, is pretty well sold on the idea that he won't get pensions this year from the fact-finders.

MISCALCULATION?—New York State's Gov. Thomas E. Dewey, with a huge state works fund available, made the news last week by ordering a step-up in his spending program to ease rising New York State joblessness. Noting that building trades workers normally work most steadily in the summer, Dewey ordered the step-up aimed particularly at job-making in fall months. His order, though, came just at a time when signs of a business pickup were numerous enough to make some people wonder in print whether or not the recession might be ending.

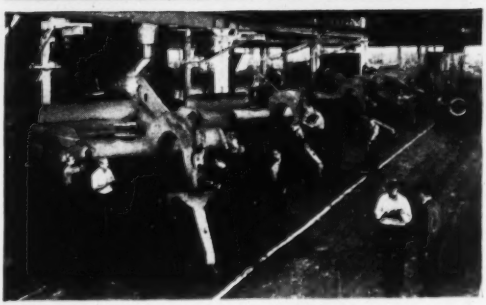
SLUDGE COOKING—The Porteous system of sludge disposal, which was under consideration in a 105-mgd. sewage treatment plant for Oakland and five adjacent California cities, has been ruled out after sessions between local engineers and consultant Samuel A. Greeley, of Chicago. This system, used in three English cities, involves heating digested sludge under pressure. Advantages are that no chemical treatment is necessary before filtering, and the resulting filter cake has a moisture content that makes it usable as fertilizer without further drying. Officials ruled out this scheme because of lack of time to do an adequate design job for what would be the first large-scale, continuous-flow use of this system.

WAGE PRESSURE RISING—Unions aren't the only ones pushing for wage boosts. There's more pressure coming from the government. Labor Secretary Tobin has been upping minimum wages quietly in certain industries by setting higher ceilings under the Walsh-Healy Act. (This governs pay rates on any government contract exceeding $10,000.) By setting higher minimum wages on federal contracts in steel, textiles, glass and men's clothing, Tobin in effect set new industry minimums in these lines. Wage-hour Administrator McComb will jack against wage floors next. He's going to raise the pay levels at which overtime exemptions begin for white collar workers. This minimum hasn't been touched since early 1942. The new regulations will raise from $30 to $55 weekly the salary of those defined (and exempted from overtime) as executives. For professional and administrative personnel, the overtime break point will go from $200 monthly to $75 per week. There's this relief, though. You won't have to pay overtime to border-line white collar cases, i.e., a bookkeeper, where the pay is more than $100 a week. These regulations have been drawn for some time. McComb's just waiting for the ruckus over Tobin's Walsh-Healy minimums to quiet down before advancing them.

PRIMING THE MONEY PUMP—The recent cut of two percentage points in bank reserve requirements isn't the last that's on tap for this year, even though there was an earlier reduction (in June) when some temporary anti-inflation measures expired. Object of the latest cut was to get monetary policies in gear with the anti-deflation policies which the administration adopted officially in the recent economic report. Unfreezing of bank reserves is aimed in part at making banks able to finance a business upturn, in part at enabling them to pick up the deficit financing obligations the government will be selling.

TAX-WORK RELIEF, ANYWAY—It's going to be less troublesome to handle payroll deductions for your employes next year. Now, you must fill out two forms each quarter. One is for the income tax withheld, the other for social security deductions. After Jan. 1, the Internal Revenue Bureau will combine both forms into one—and it'll take just one check, instead of two, to pay it. The plan worked well enough in its recent Baltimore tryout to warrant its getting national application.

Mountain Movers



COMPLETION OF CATERPILLAR TRACTOR COMPANY's new building LL, with 850,000 sq. ft. of manufacturing space, at Peoria, Ill., makes a total under-roof area of 118 acres devoted to the production of the world-famous line of earth-moving equipment which does such a large share of the herculean spade-work of lifting and lowering the face of the nation.

In great factories like Caterpillar's, quality construction is recognized as being a prime requisite of quality production—so it is significant that this immense new plant was built throughout with Lone Star Cement. The structure is staunchly supported on 1306 concrete-filled piles, with designed bearing loads ranging from 45 to 60 tons. And a pleasant aspect of the plant itself is the attractive appearance of well-made concrete—in floors, machinery bases, driveways and for scores of other purposes.

Remember, there's a Lone Star Cement for every construction need: LONE STAR PORTLAND CEMENT for strong, durable concrete in all types of work . . . "INCOR" 24-HOUR CEMENT for top-speed construction with 50% less forms and important winter economies . . . LONE STAR AIR-ENTRAINING CEMENT for highway work and other uses . . . LONE STAR MASONRY CEMENT for quality masonry. The name LONE STAR on cement assures the utmost in quality and uniformity. *Reg. U. S. Pat. Off.

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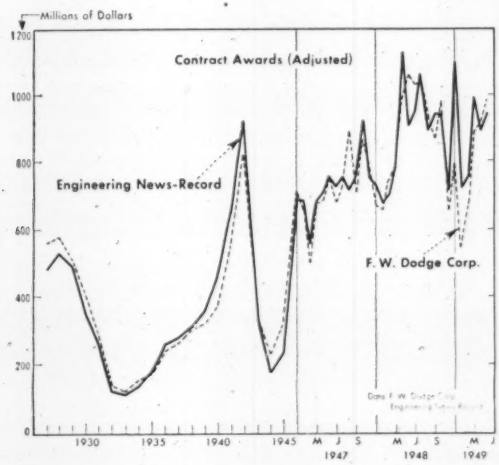
CONSTRUCTION TRENDS



When the Engineering News-Record and F. W. Dodge series are adjusted for differences in what they cover, even though they vary in one month, they track together over longer periods.

Which Way Is Construction Going?—II

Why do F. W. Dodge Corporation and ENGINEERING NEWS-RECORD reports on contract awards differ from each other from month to month? And what is the best way to use these series?

As the Trends in the August 11 issue of ENGINEERING NEWS-RECORD pointed out, contract awards are the best indicators of what's ahead for the construction industry. But the two series can differ sharply in any one month.

They vary because they report on different sections of the industry. ENR covers heavy construction, including engineered buildings and mass housing, while Dodge includes contracts as small as the building of a single home. A second major difference is that ENR covers the entire country while Dodge covers only 37 states East of the Rockies. But—if you allow for these major differences—the two series over a period of time show very much the same trend.

To show how closely Dodge and ENR figures check, you need do only two things: First, add ENR's figures for the far West (not covered by Dodge) to the Dodge total. Second, add Dodge's residential figures (most of which are not reported by ENR) to the ENR total. As the chart above shows, these two operations will give two series of figures that track right along together over the years. This is a rough comparison. Large-scale residential projects which are reported by ENR may be counted twice in adjusting ENR's total this way. That is compensated for, however, by the large amount of small commercial and other contracts that inevitably go along with heavy new residential developments. The small differences in the series can be ironed out, too, by other adjustments. For example, some of the differences can be explained by the timing of reports, the fact that ENR reports large projects as one contract, while Dodge may report them in sections or when sub-contracts are let. A day's difference in reporting some contracts may mean that the two series could vary substantially in any one week or any one month. There are differences, too, in what and when is a contract. Dodge, for example, eliminates architectural and engineering fees. Space is not available to outline all these minor differences here.

But this is the point: One month's changes in contract awards can vary a lot—but for any two months, the two series correspond fairly well, and over longer periods both Dodge and ENR show the same trend.

Add these facts: ENR concentrates on heavy construction commercial, industrial, public building and mass housing across the country while Dodge is limited to 37 states and includes projects of smaller size.

Remember: Contract awards are the best indicators of what's ahead in the business.

And you'll have a good working guide for making the best use of these figures.

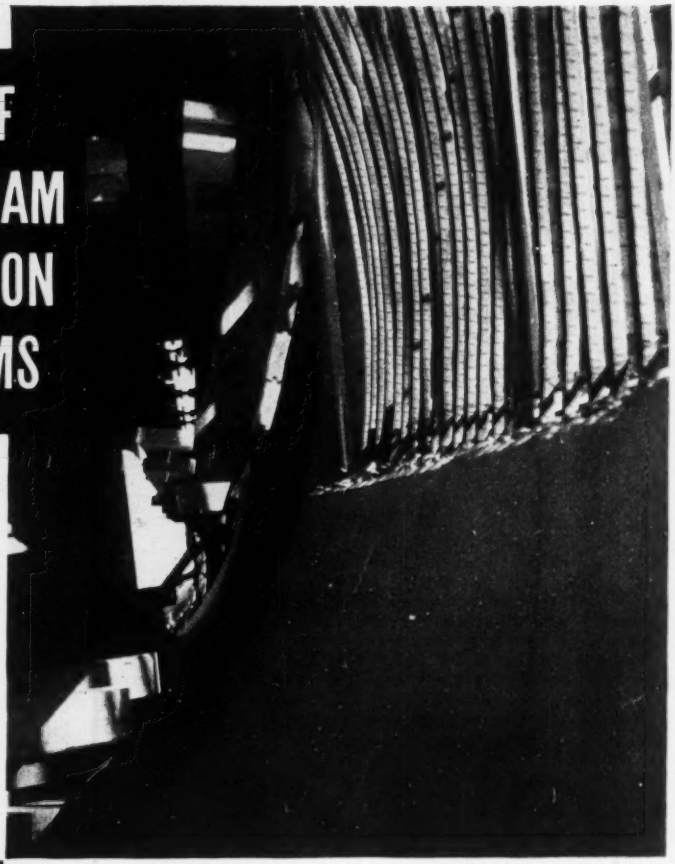
Big Year for Hospital Construction

Hospital construction, lagging since war's end, is expected to set new records this year.

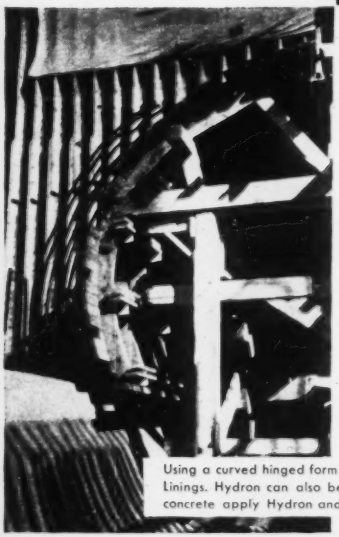
The General Services Administration—which absorbed the Federal Works Agency in one of the first major federal reorganization moves—estimates that publicly financed hospital construction alone will run to about $425 million this year. It will be the highest on record—both in terms of dollars or in the number of beds added. In dollars, it will be almost double last year's activity and roughly six times as much work as was done yearly in the 1930's.

The public hospital construction job has only been begun, however. State plans for hospital construction total 865,000 beds. To this must be added needs for other institutions, such as state farms. Finally, there is a big backlog of work on new veterans' facilities. In all, the state and federal government requirements for hospitals and institutions add up to about $8.5 billion.

BUILDERS OF SAN ANGELO DAM USE HYDRON ON CURVED FORMS



Shown at the right is a tunnel section of the San Angelo Dam, San Angelo, Texas. The concrete was cast against Hydron Form Linings which provide a smooth, pit-free surface, enabling the concrete to withstand the grinding action of high-velocity silt-laden water.



Using a curved hinged form on the upper 300' with Hydron Form Linings. Hydron can also be used on lower 60'. After floating concrete apply Hydron and weight down with 2" of sand.

Hydron absorbs excess water and eliminates trapped air from the surface. This makes the concrete several times more resistant to abrasion and freeze-thaw conditions. The case hardening effect is gradual from the surface into the mass for about an inch.

Other big installations on which Hydron was used are: Fall River Dam, Norfork Dam, East Sidney Dam, Whitney Dam, Cherry Creek Dam, Soo Canal and lock walls, Chain O' Rocks Canal, Delaware & Chesapeake Canal bridge abutments, Maine Turnpike bridge abutments.

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Back to Normal

IT IS NOT SAFE to characterize any period as "normal times" until long after the normalcy has ceased, but a look about us today reveals a good many normal things—and others that we like to regard as normal. Construction materials are plentiful. Prices, off about 7 percent from the peak, show a tendency to stabilize. Labor is asking for more wages, but is not militant in its demands. Worker productivity is increasing. Some engineering firms and contractors are busy, others are looking for work. There is unemployment in some cities, and plenty of work in others. Some investors are optimistic, others decide to wait for "better times." There is risk, but there is activity. Conditions in the last half of 1949 may not be to everyone's liking, but they are apt to be normal.

Nature Wins Another Round

THE ECUADOR EARTHQUAKE merely adds another bead to the string of such disasters that encircles the Pacific Ocean shore where great depths and bordering high and "young" mountains combine to set up unstable conditions in the earth's crust. Forces no greater than a change in barometric pressure can exert the "trigger" pressure that upsets the finely balanced equilibrium and brings man's structures tumbling about him—unless (and only to a degree even then) he gives some attention to providing resistance to the forces that earthquakes set up.

A look at the pictures reproduced on another page of this issue shows types of construction least likely to resist the horizontal movements induced by earthquakes. Bearing wall construction of adobe, tile, brick and masonry cannot possibly be tied together into a unit that can move as a whole. Great heavy masonry structures, such as the cathedral, can be made much more stable, but their wide spans and high slender towers are points of weakness that in Ecuador, as in other places previously, brought on collapse and loss of life. In Ecuador, too, the popular tile roof for residences and commercial buildings must have been the source of many fatalities; the thatched roof that the Indians used before civilizing influences came to these Ecuadorian towns would have been much better.

The lesson from the Ecuador earthquake is the same as from all others: integrate all elements of a structure so that it will move as a whole from foundation to roof; and leave off or securely anchor parapets, ornaments or projections of any kind. A third requirement—to use skeleton frames of steel or reinforced concrete with strong walls and partitions, a type of structure in which stresses can be positively determined—may not be practicable for Ecuador's mountain towns, but is a must for all major structures in more-developed areas.

With all of his knowledge and effort, man cannot wholly protect himself from Nature's greatest forces, but in a majority of the contests he can make a fair showing. Using the types of construction prevalent in Ambato, Pelileo and the other affected towns in Ecuador he doesn't have a chance. Nature will be the winner in every round.

Dilemma in Education

THE CURRENT TREND in engineering education toward broadening curricula to include cultural subjects faces serious setbacks due to the development of new and important engineering subjects that must be added. A good example is statistics. Until recently, few engineers had any need for this subject. Yet a stage may be reached in the next decade when engineers who are not familiar with the laws of probability and with statistical methods may frequently be embarrassed in their work. Statistics has become an essential engineering tool in such fields as hydrology—for predicting flood flows; structural design—for selecting allowable stresses and live loadings; highway design—for estimating traffic volume; water purification—for determining amount of stream pollution; and market research. The growing demand for engineers with a knowledge of this subject will compel its inclusion in college curricula. But what will it replace?

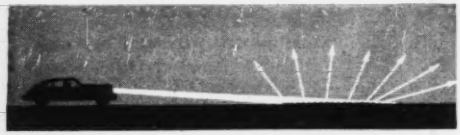
Minimum Speeds for Parkways

PEAK TRAFFIC on summer Sundays overloads most roads leading into large cities. This condition can be remedied somewhat in the case of parkways and limited access highways having two or more lanes in each direction by enactment of laws forbidding operation of vehicles at speeds that unnecessarily obstruct traffic, and by strict enforcement of laws requiring slower-moving vehicles to stay on the right. Those cars which elect to move slower than even right-hand lane operational efficiency dictates should be required to use other than main roads. Such rulings may appear drastic, but both safety and the need to use our expensive highways at their utmost capacity and efficiency must soon require a reorientation of our thinking.

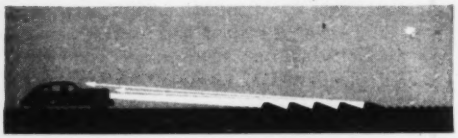
So far, the operational as contrasted to the design thinking that is expended on improving highway efficiency has been grossly neglected. We consider the operation of a sewage treatment plant to be an engineering matter, but highways operation is seldom regarded in the same light. This is neither logical nor intelligent. Engineers should initiate and give all support possible to efforts to increase the operational efficiency of our modern traffic arteries.

WHY DRIVING IS SAFER ...DAY AND NIGHT

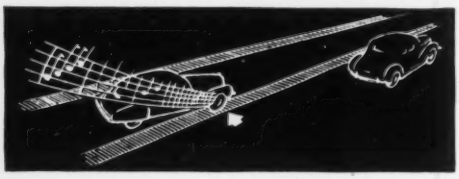
with this double-duty Traffic Marker that guides drivers by sound and sight



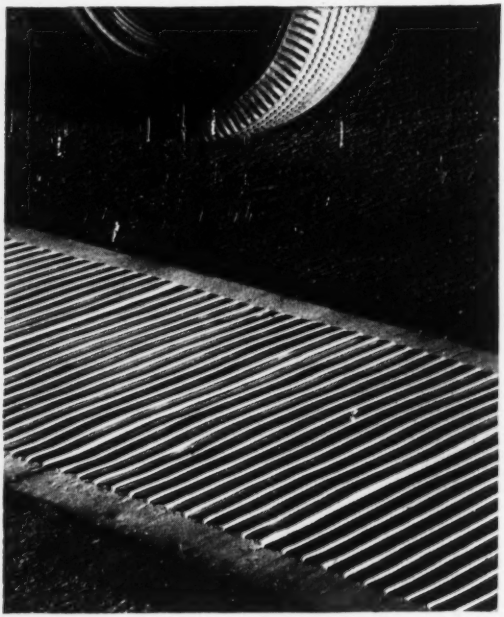
At night, on ordinary highways, headlight rays strike the surface at a flat angle. The texture of the concrete (exaggerated for illustration purposes) diffuses the reflected light. Headlight rays are reflected *away from* the driver. Visibility is low. On rainy nights, water fills these depressions, reflects *more* light away from the driver. Visibility is lower.



The double-duty Traffic Marker, made with Atlas White Cement, overcomes the above conditions. Built flush with the highway level, it clearly outlines the highway by day. At night, faces of the corrugations catch headlight rays, reflect them back to the driver, forming a continuous ribbon of light. When wet, especially at night, the film of water makes the ribbed surface more mirror-like. Visibility is increased.



The New Traffic Marker guides drivers by *sound*, as well as by sight. Should a car veer out of lane and ride on the corrugated surface, a distinct hum or whine is heard immediately by the driver. It is audible day or night, in all weather. Thus the driver's eyes and ears are constantly kept alert to greater driving safety!



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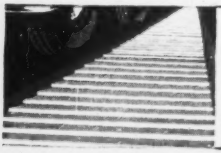

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ENGINEERING NEWS-RECORD

AUGUST 18, 1949 VOL. 143, NO. 7

Unified approach needed to road transport problem

It isn't a question of highways or vehicles, according to Brookings study, but one of safe, efficient transportation at lowest possible cost

Automotive transport is chasing its tail—and its difficulties won't be remedied until they're attacked as one problem.

That's the conclusion of highway economist Wilfred Owen, in a study published recently by the Brookings Institution, Washington, D. C. Title of Owen's study is "Automotive Transportation—Trends and Problems.

Government, as the highway supplier, and the automotive industry, as the supplier of automobiles, must be guided by more thorough consideration of ultimate transport objectives, not merely by highway construction economy or by technological advance in vehicles, Owen found. The real objective of the efforts of both, Owen pointed out, lies not in supercars nor in highways, but in the safest, most effective and efficient automotive transport. Judged on that basis, things are sadly out of balance now, he declared.

Let technology pay

For instance, of $30 billion spent annually on automotive transport, Owen found only five to 10 percent of it going to construction and maintenance of roads and highways. And of that amount, entirely too much is going for the maintenance and repair of roads which were obsolete for modern automotive purposes many years ago.

The answer to this, Owen finds, is to return to the practice of the era when automotive transport had its greatest expansion. Then, advancing technology cut costs in such fashion that the savings could be devoted to highway expansion. Our departure from that policy for one of stabilized highway expenditure in the face of growing highway needs lets the benefits of progress in one sector be dissipated for the lack of it in still another sector.

"Paying less for highways," Owen pointed out, "may mean paying more for highway transportation. What we save in highway expenditures, we may lose in higher operating costs, with lower standards of service the net result."

It couldn't happen, Owen goes on, if automotive transport were under one unified management, rather than split between industry and government.

The fact that it can't be so unified "does not preclude the possibility of highway and automotive industry policies being guided by more thorough consideration of ultimate transportation objectives."

Among ways of using better what we have, Owen mentions these possibilities:

1. Altering land acquisition policies to prevent governments from paying for values its own roads have created.

2. Altering adjacent land use policies to prevent construction of facilities which destroy a road's transport value. Modern high-speed, heavy-volume highways no longer can furnish transportation and access to land at the same time, Owen says.

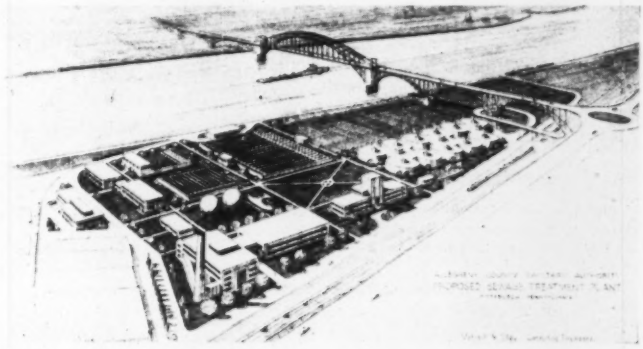
3. Redistributing road and highway responsibility for better administrative performance. Presently, Owen found, approximately 35,600 government agencies have responsibility for providing street and highway facilities. Money is wasted in returning to tiny units their trifling share of highway taxes.

Owen sees impressive possibilities for automotive research, particularly in fuels and vehicle design, to yield the savings he wants applied to highways.

But he questions sharply the value of the "small, low-priced car" and points out that without durability, such a vehicle may, over a period of years, cost more per mile of service than a higher-priced car.

ENR INDEX READY

The semi-annual index of ENGINEERING NEWS-RECORD January-June, 1949 is ready for distribution. Copies will be sent automatically to all who have ordered copies of earlier indexes in recent years. Copies will be supplied to other subscribers who request them. Requests should be sent to the Editor, ENGINEERING NEWS-RECORD, 330 West 42nd Street, New York 18, N. Y.



PROPOSED CENTRAL SEWAGE TREATMENT PLANT for Pittsburgh and 101 other participating communities is shown in an architect's drawing. Not yet decided upon, the proposed plant would cost $13,845,000, and would be part of an overall proposed project whose estimated cost is $82,000,000. The plant would be situated on the Ohio River. (Allegheny County Sanitary Authority photo)

NSPE meeting endorses "bold new program"

The National Society of Professional Engineers has endorsed President Truman's "bold new program" for technical assistance to underdeveloped nations.

With an eye on the jobs its members might get around the globe, NSPE's summer meeting at Denver endorsed "a legislative program to carry forward a program of technical assistance to the free nations of the world with proper emphasis on the contribution which may be made by the engineers of the United States." Legislative chairman T. C. Forrest, Jr., of Dallas, said he believed NSPE's action is the first such endorsement of "Point Four" by any engineering group.

The resolution noted that an integral part of the proposed program, first unveiled in President Truman's Inaugural Address, "involves the use of engineering skills of the highest order in all parts of the world" to raise living standards. Possible engineering tasks under Point Four have been described by a State Department official as development of mining facilities, irrigation, malaria control, airfield construction and maintenance, better raw material processing, water supply systems and training of other engineers.

Wells and pumping seen as cure for slides

Seattle's engineering department has before it the suggestion that it correct a slide condition on a steep hillside by drilling wells into the slope and pumping water from them.

The suggestion was made by P. J. Hoover Mackin, professor of geology at the University of Washington, at the city's request. The wells would tap the water-logged sand strata, 110 to 160 ft. thick. Intermittent pumping would do the job.

Hardly seems worth it

San Francisco can have the top of Bernal Heights leveled and graded for an observation point and it won't cost the city a penny.

Low bid for the job was $00.0001—one-tenth of a mill—submitted by Charles L. Harney, Inc., which would like to use the dirt in completing its contract for construction of a portion of the Bayshore Freeway.

The A. & B. Construction Co. bid $1. Highest bid was $48,750, by Devincenzi & Haskins Co.

HOUSTON-GALVESTON FREEWAY—About three miles at the Houston end of the Gulf Freeway is now in service. This picture, taken from above Main St. in Houston looking toward Galveston shows the completed section, and in the distance, the grading work for an additional mile. A contract for an additional section is to be let in October and another in January or February to complete the freeway through the Houston metropolitan area, all of which should be in operation by the end of 1950.

Beyond the city limits considerable grading and bridge work and eight miles of concrete paving are under way. The 50-mile highway is expected to be finished about the middle of 1951. Construction is under the direction of the Texas Highway Commission, D. C. Greer, highway engineer.

Tampa bridge project transferred to state

Nine miles of causeway and two major steel bridges are to be advertised for bids soon as a result of the Florida State Improvement Commission's take-over of the Tampa Bay Bridge project.

Estimated cost of the project is now set at $15,800,000, and the commission has authorization from the legislature to undertake financing and construction. The commission took over the project—and the St. Petersburg-Manatee County ferry service—recently from the St. Petersburg Port Authority. The original plans, drawn by Bail, Horton and Associates, Bradenton, have been revised by the commission.

Hospital aid program doubled by U. S. Senate

The Senate last week (Aug. 9) passed the Hospital Survey and Construction Amendments of 1949, a bill which would double the program of Federal aid to states for hospital construction.

The bill, which goes to the House for further action, would extend Federal assistance for hospital construction to June 30, 1950, and increase the annual authoriation from $75 to $150 million.

Under the bill, the Federal share in the cost of hospital construction projects would be changed from the present one-third to range as high as two-thirds in some states having low per capita incomes. The minimum state allotment would be raised to $200,000—thus increasing the previous minimum allotment by $100,000.

Also provided in the bill is provision for the U. S. Public Health Service to make grants totalling $1,200,000 a year for research, experiments and demonstrations relating to effective development and utilization of hospital services, facilities and resources.

C. S. Strike recovering from airplane accident

Clifford S. Strike, head of the F. H. McGraw Construction Co., New York City, is reported to be progressing favorably in hospital following an airplane accident at East Hartford, Conn., Aug. 8, in which Mrs. Strike and one other woman passenger were killed, and several injured.

The crash occurred as a party of seven was taking off in a 2-engined Beechcraft owned by the construction company. The flight was to have been from East Hartford to Red Bank, N. J. Occupants were pulled from the flaming aircraft by firemen.

Arizona completes tunnel

Arizona's longest tunnel—a 410-ft. bore 30 ft. wide and 19 ft. high—has been completed for a new section of the Clifton-Morenci highway.

Built by the Fisher Construction Co. of Phoenix, the tunnel was completed 15 days ahead of schedule. Work was started May 4 and was completed July 23.

The tunnel's claim to being the longest in the state will be short-lived, however. Another, two mi. east of Superior scheduled to be started soon, will be 1,200 ft. long and will be 43 ft. wide.

Cleveland district communities plan water and sewer authority

Action possible under new state law which permits cities and counties to organize and finance districts—Action seen coming this fall

Water and sewer activity in Greater Cleveland (Cuyahoga County) will spurt after Sept. 29, now that Ohio has a law on the books permitting inter-municipal organization for such purposes.

Passed in June, the law was signed recently by Gov. Frank Lausche, to become effective Sept. 29. It permits counties or cities jointly to organize water authorities or districts. As a result:

1. Greater Cleveland's Regional Planning Commission, after Sept. 29, will sponsor petitions from a number of Cuyahoga County municipalities. These will be presented to the county commissioners, asking that such an agency be established.

2. In November, Cuyahoga County voters will be asked to approve a small special tax to raise funds for preliminary engineering plans for a county-wide sewer and water district.

Can issue revenue bonds

The new law, which is patterned rather closely after the Allegheny County (Pa.) sewer authority act, not only permits municipal subdivisions to participate in water and sewer undertakings beyond their own limits; it also permits the issuance of revenue bonds, under county court jurisdiction. Such bonds would be backed by the authority's revenues from sales of products, water service or sewer rental. Direct assessments against benefited property owners could be invoked, under certain conditions.

Such districts would originate in the county commissioner's offices upon petition by participants. There's a short-cut available through the county court, which must approve any action the commissioners take on the matter anyway. Once an organization petition is before the judges, they must hold public hearings before any formal action or bond approval is given.

Communities which make up such an authority will have to place existing water and sewer facilities under jurisdiction and operation of the authority for the life of the revenue bonds. But such authorities won't in any way disturb existing conservancy districts.

Neither Director Proctor Noyes, of the Greater Cleveland Regional Planning Commission, nor Cuyahoga County commissioners yet have any formal petitions for establishment of such an authority. But indications are that the first will be formed from a number of Cleveland suburbs and the westerly areas of Geauga and Lake Counties, which drain into Cuyahoga. About half the latter's area is now in 18 sanitary districts under county commissioner jurisdiction. Eventually, all Cuyahoga's 450 sq. mi., and its 55 communities, plus perhaps 50 sq. mi. more from Geauga and Lake Counties, would be brought under one authority, if the plans of the Regional Planning Commission are followed.

After a district is formed, a master plan for participating communities will be drawn. It is to be sufficiently flexible to permit other groups to join later. Since some of the interested communities already have completed plans for water and sewer facilities, work on these conceivably could be started soon after the master plan takes shape.

To finance planning, the new law permits an assessment up to three-tenths of a mill for as long as five years. This would yield perhaps $3,500,000 for the Cuyahoga planning. Noyes believes a county-wide project would cost $100 million.

AFL-builders group sets dispute rules

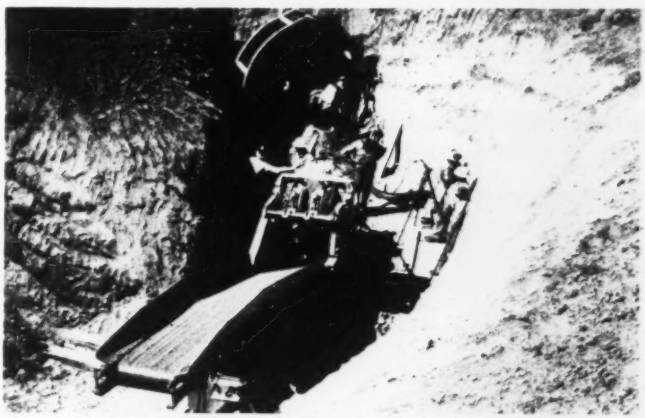
A committee of contractors and the AFL building trades unions put the finishing touches this week to changes tentatively agreed upon in the operation of the joint plan for settling jurisdictional disputes in the construction industry.

The plan, in effect since May, 1948, has been re-established and will function under the old rules until changed. The AFL unions terminated the plan, effective July 1, but later changed their minds when Congress failed to repeal the Taft-Hartley labor law.

Proposed changes will be brought before the AFL Building Trades Executive Council meeting at Toronto Aug. 13. If approved, they will then be considered at the Building Trades Convention at St. Paul in October. Formal action will also be required of the Associated General Contractors and the eight specialty contractor associations participating in the plan.

Amendments tentatively agreed upon were described by an industry source as "constructive suggestions to improve the plan without any great change in the principles." Most of the changes were proposed by the industry, he said.

They are intended to make the procedures more flexible, give more authority to the board of trustees and permit more agreed settlements by giving unions a say in the decisions.



PORTLAND'S NEW $12,000,000 SEWAGE DISPOSAL PROJECT, aimed at cleaning up the Willamette River as it flows through the Oregon city, will have a three mi. tunnel underlying the residential section of the peninsula district. Here, a mucking machine starts work at the south portal.

Ecuadorean construction no match for recent earthquake's violence

Landslides and building collapse push death estimates to several thousands, property damage to $50 million—Second quake destroys third town—Ambato loses 70 percent of homes, many die in church

Ecuador's had its share

Here's Ecuador's earthquake history as compiled by Coast and Geodetic Survey:

1797—Feb. 4. An earthquake near Quito killed 41,000. No other details.

1867—A very destructive earthquake near Quito demolished many buildings.

1868—Aug. 16. An earthquake near the Ecuador-Peru border killed 70,000.

1906—Jan. 31. An earthquake just off the coast near the Colombia-Ecuador border—one of the severest in recorded history—threw up a tidal wave which killed 600 people.

1938—Aug. 10. A "rather destructive" earthquake in western Ecuador.

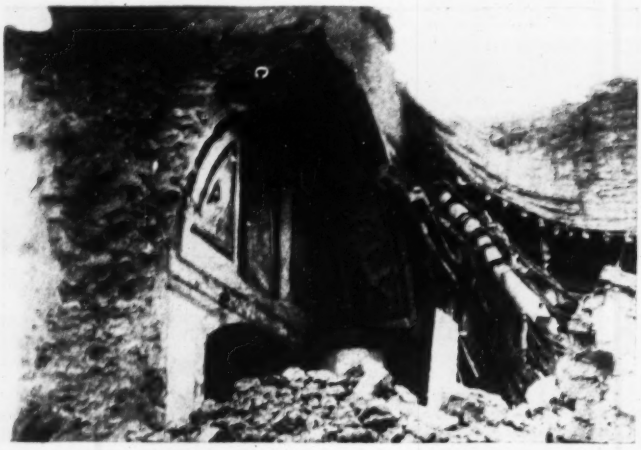
1955—February. Many buildings were wrecked in Valle Chillos.

1942—May 13. Guayaquil—last 200 years and suffered $2,500,000 damage. Five bordering provinces suffered very extensive damage. In the subsequent three months, 1,000 after-shocks were felt.

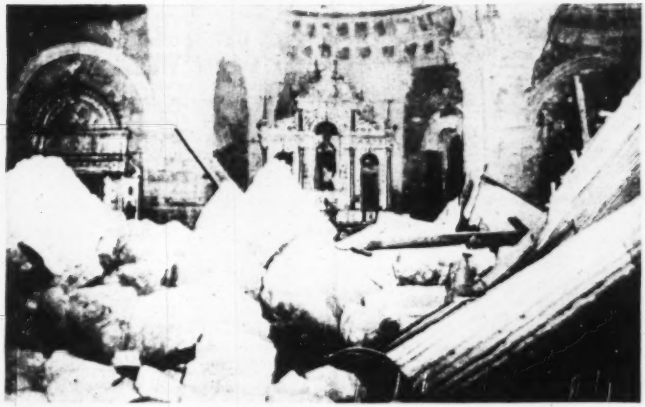
1943—Jan. 30. Hundreds were killed in Guayaquil, many buildings damaged.

1944—Sept. 15. An earthquake demolished many homes and did heavy structural damage to downtown buildings in Portoviejo.

EARTHQUAKE PARADOX at Ambato finds cathedral shattered, power pole and wires unharmed. (Wide World Photo)



LITTLE WHITE SCHOOL HOUSE at Ambato suffered heavy damage. Note the adobe construction of the shattered wall at the left. (Wide World Photo)



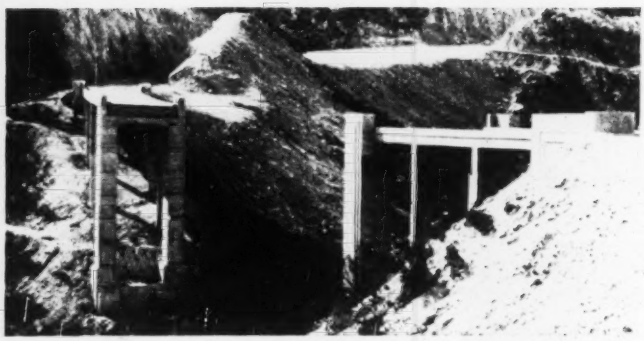
HUNDREDS DIED in this Ambato cathedral above, when much of it collapsed as a result of the recent Ecuador earthquake. Most of the dead were children. Damage was such that most of the homes which remain must be torn down. (Wide World Photo)

CENTER OF DESTRUCTION in the recent Ecuador earthquake is located by the symbol. It lies in the Andes Mountains, about 60 mi. south of Quito.

HARDEST HIT by Ecuador's recent earthquake were the small towns of Pelileo and Patate. At right is a picture showing the destruction at Pelileo, where all homes were reported destroyed. Families are digging in the ruins. (Wide World Photo)

LACK OF HEAVY EARTH-MOVING EQUIPMENT was reported to be one of the principal handicaps last week as Ecuador began digging out after one of its most violent earthquakes. This Ambato street, piled deep with rubble which has smashed vehicles at right and left, underscores the need for such equipment. (Wide World Photo)

NEITHER MASONRY NOR ADOBE was proof against the earthquake which shattered central Ecuador. This was Ambato's market. (Wide World Photo)



PIERS AND ABUTMENTS ARE READY for steel plate girder arch on this bridge across Pinto Creek on Highway 60 between Superior and Miami in Arizona. The $460,000 bridge is 710 ft. long; the main span will be 350 ft. with the roadway 150 ft. above the streambed. Bridge requires 500 tons of structural steel, now being fabricated by the Allison Steel Co., Phoenix. Part of same project on Highway 60 is a similar bridge and a $1,000,000, 1,000-ft. tunnel. August J. Ram is in charge of construction on the Pinto job. Fisher Contracting Co., Phoenix, holds the contract.

Portland sewage switched to Columbia

Crews working from both ends of a 16,410-ft. tunnel will meet somewhere under the peninsula district of Portland's (Ore.) residential area, but just where and when will depend on the number and depth of rock formations encountered.

When completed the tunnel will extend from a point near the Willamette River to the site of a treatment plant to be constructed near the Columbia River, 3 mi. distant. Crews are pushing the bore through at the rate of 25 to 50 ft. a day, using small battery-powered locomotives to haul dirt and rock from the excavations. Ten men work around the clock at each end of the project.

The horseshoe-shaped tunnel, 8 ft. high and of the same width, at its deepest point will be about 100 ft. under the surface.

Construction calls for 525,000 lb. of steel, 450,000 bd. ft. of lumber, 16,410 lineal ft. of concrete lining and 500,000 lb. of reinforced steel.

The tunnel, part of a $12-million project, will move sewage to the new plant where wastes will be treated and then discharged into the Columbia River. Sportsmen had criticized the project because the plant will give only primary treatment to wastes, but United States public health service engineers and state sanitary authority officials approved the plans on the ground that the swift flow of the Columbia will quickly dilute the plant's discharge.

The primary purpose of the project is to do away with pollution of the Willamette River, a slow moving stream which flows through the heart of Portland.

Road groups name panel to promote efficiency

Aiming at increased efficiency in the highway industry, the American Road Builders' Association and the American Association of State Highway Officials have set up a joint committee to study matters of mutual interest. The group is expected to organize soon and lay out a schedule.

ARBA's membership will be:

Hal G. Sours, Columbus, Ohio, consulting engineer, chairman; Alan Buck, Decatur, Ill., Macon County highway superintendent and president of ARBA's County Highway Officials division; Joseph D. Bonness, Milwaukee contractor and vice-president of ARBA's Highway Contractors' division; A. B. Gay, Richmond, Va., contractor; Julien R. Steelman, vice-president of Kochring Co., Milwaukee, Wis.; and H. H. Kranz, Cincinnati engineer and president of ARBA's Municipal division.

AASHO members will be:

C. W. Brown, president of the association; C. M. Hathway, Illinois, chairman; G. T. McCoy, California; J. A. Anderson, Virginia; G. A. Hill, Connecticut; E. L. Roettiger, Wisconsin; and A. C. Clark, Bureau of Public Roads, Washington, D. C.

PBA handpicks bidders for White House repair

Wherever else they may roam in Washington, the "five percenters" won't get a look in on the White House remodeling. (ENR August 4, p. 28).

That's the vow of the Public Buildings Administration.

PBA's going to sift contractors for competence—has been doing so already. Those who bid will do so only on their fees. The government will pay all other bills on the job.

PBA is advertising for persons interested in the job to declare themselves to the agency. Those who answer get questionnaires designed to show whether the respondent is capable of the big job. Bidding forms are sent to those considered capable of it.

First operation in the reconstruction job will be underpinning the outside walls, which a committee has decided should be kept for antiquity's sake. Workmen will have to dig 22 ft. below the existing walls and pour concrete in a small strip. Then, skipping a strip, they'll excavate and pour again, working their way around the building in that fashion until the walls rest on concrete. Next step will be to lift the third floor and roof on the shoring put in nine months ago to hold the building up. Then the interior can be torn out. Footing for the interior columns to hold the steel frame then can be put in, to a depth of 22 ft.

The $5,400,000 White House job is part of more than $100 million in federal work now going on in the District of Columbia metropolitan area.

North Carolina program to yield roads this fall

First of the rural highways for which North Carolinians voted a $200-million bond issue (ENR June 9, p. 56) will be built this fall, Highway Chairman Henry W. Jordan said recently. The state expects to spend the first $50,000,000 during this fiscal year, Jordan added.

"We expect to spend these funds in an intelligent and business-like manner," Jordan asserted, "as soon as the Commission's road-building facilities have been carefully expanded to take care of the additional load."

The expansion, he indicated, is already under way. Part of it was presumed to be the purchase of $5,000,000 worth of new equipment, with which the Commission was proceeding despite protests of contractors. (ENR July 28, p. 25).

W. H. Coverdale dies; engineer, industrialist

Wm. H. Coverdale, 78, president and chairman of the American Export Lines and member of Coverdale & Colpitts, consulting engineers, since 1913, died in New York City, Aug. 10.

A Canadian by birth, Mr. Coverdale was graduated from Geneva College, Beaver Falls, Pa., in 1891 and he later was given an honorary degree from Queen's University, Kingston, Ont. He started his engineering career as a rodman with the Pennsylvania Railroad in 1891, and while a young engineer he also supervised construction of the Westinghouse plants in East Pittsburgh, Pa. He went to New York in 1901 where in time he became one of the country's most successful consulting industrial engineers and an officer and director in many large corporations—railroad, airlines, steamship lines and manufacturing concerns.

Described as a man who mastered every industrial challenge he tackled, he built a debt ridden southern steel company into a $37,000,000 concern and erected the resort hotel, Manoir Richelieu, Murray Bay, Que., to help revive a steamship line to be salvaged.

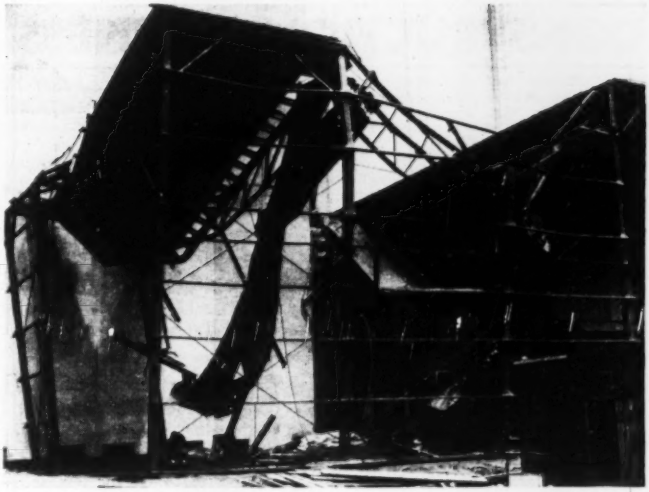
VA uses formula to locate $17 million N. C. hospital

Salisbury, N. C., was selected last week as the site for the 1,000-bed veterans neuropsychiatric hospital to be constructed in that state. The hospital, to cost about $17,000,000, will be erected on a plot of 411 acres acquired by the Veterans Administration four years ago.

Selection of Salisbury was made after Veterans Administrator Carl R. Gray, Jr., personally inspected five North Carolina sites on which engineering surveys had been made previously. As reported by the administrator, all the sites were so well adapted to the purpose that it was impossible to arrive at a determination on the basis of personal observation.

After his return to Washington, a mathematical formula was devised for comparing sites. In this formula, each element of importance in locating a hospital is weighted to permit making the selection on a strictly mathematical basis. Use of the formula in the North Carolina problem proved so successful that Administrator Gray announced it would be used in all future selections of hospital sites.

Design of the hospital and supervision of construction will be handled by the VA construction service.



COLLAPSE OF A 50-FT. TRUSS at a train shed being erected beside a grain elevator in Enid, Okla., recently injured nine men. Third truss from the left, 50 ft. long, collapsed, pulling with it the two to its left. Six other trusses were intact. Engineers haven't ascertained cause of failure. (Photo by W. J. McGlasson, Enid Eagle)

Nine hurt as train shed truss falls

Nine construction men were injured recently when a 50-ft. truss collapsed and pulled down a third of a new train shed to serve the Union Equity Cooperative Exchange grain elevator at Enid, Okla.

Workmen were finishing one of the last loads of concrete which was being poured for a three-in. slab roof when the collapse came without warning in the third truss from one end of the nine-truss structure. Workmen, steel, concrete and lumber fell 30 ft. Nine men were hospitalized, three of whom hadn't been released last week.

The shed was 135 ft. long, and 67 ft. wide at its widest point. Structural steel columns and trusses were used to support the concrete roof slab, which was formed by paper-reinforced steel mesh. Interior truss ends were framed directly to the concrete grain elevators.

The truss which collapsed was returned to the shop of the Patterson Steel Co., Tulsa, which erected the steelwork. Engineers have examined it carefully without finding, thus far, any evidence of what caused it to collapse. P. W. Patterson, owner of the company, said examination would continue until something definite is uncovered.

The trusses were standard steel-slat trusses, whose top chords were of 5 in. by 3.5 in. by $\frac{5}{16}$ in. angles and whose bottom members were 4 in. by 3 in. by $\frac{3}{8}$ in. angles. Interior members were angle irons of various size. The trusses were riveted, with bolted field connections. Roof joists were welded to the top of the trusses. There was no indication of joint failure. The collapsed portion of the shed is being re-erected. Only design change as a result of the collapse will be that trusses will be framed into the columns rather than rest on top of them.

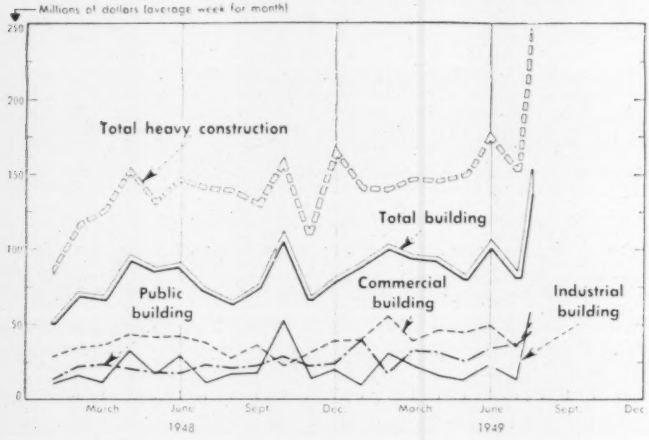
Two die in tunnel blast set off by lightning

Two men were killed July 30 at Rock Creek tunnel in Pacific Gas & Electric Co.'s Feather River hydroelectric project in northern California when dynamite charges were exploded prematurely by lightning.

Company officials reported that George W. Spears and Robert Reynolds, construction workers for Arundel Corp and L. E. Dixon, contractors, were killed when about 10 out of 60 charges in a partly loaded 25-ft. section heading were apparently detonated by lightning conducted by a wet seam in the rock. Seven other men of the 20 in the tunnel at the time of the blast were treated for minor injuries, officials said.

The accident was the second of the type to occur in this tunnel, a workman having been killed in June, 1948, by a lightning-excited blast.

CONSTRUCTION BUSINESS



Big-building boosts August contracts

August has all the earmarks of a record month for heavy construction, with big-building contributing a large share of the total. The chart above shows the combined effect of contract awards for commercial, industrial and public building, on total heavy construction contract awards as reported to ENGINEERING NEWS-RECORD.

The first two weeks in August have broken all 1949 records, and with one exception are the biggest construction weeks since the war. Industrial building went a long way toward pulling itself out of the doldrums, in a spurt which along with strong commercial and public awards caused a sharp upturn in the curve of heavy building.

It is noteworthy that of the three classes, industrial building follows most closely the trend of heavy construction as a whole. This indicates that in normal times, industrial building is the most sensitive barometer of construction activity, in somewhat the same sense that construction is an indicator of general business outlook.

The relationship is particularly clear in 1948 (see cut) when deviations between the industrial and total heavy construction curves are minor. In 1949 however, with public spending on the increase, the curve of total heavy construction has climbed gradually, while industrial building was on the decline. As the margin of public construction over private widens, industrial volume will become a better indicator of private business outlook, than of the outlook for construction as a whole.

Commercial building, though it follows the basic ground-swells of heavy construction, is far less sensitive to business conditions from month-to-month. In 1949, the volume of commercial building is running ahead of last year, apparently not affected by the factors which depressed industrial work earlier in the year.

Construction cost indexes

The American Appraisal Co. Construction Cost Index for June declined three points to 489, 15 points and three percent below the peak of October, 1948. Wage increases were more than offset by increased labor productivity during the month, reports the company, and yellow pine lumber continued to decline, though there were slight increases in some Douglas fir items.

The Fuller Construction Company's Cost Index for the second quarter declined 7 points to 378, the same value the index showed in July, 1948. The peak for the Fuller Index came in January of this year, when it was 390, and since then it has come down three percent. Current savings are largely on iron and steel structural and ornamental items according to the Fuller Co.

The E. H. Boeckh Construction Cost Index rose two points in June to a national average of 387 for brick and steel commercial and factory buildings. It had topped out at 391 in March, and then dropped 1.5 percent to 385 in May before starting back up in June.

Backlog up $368 million

The backlog of proposed heavy engineering construction increased by more than $368 million during the month of July, according to ENGINEERING NEWS-RECORD's continuous inventory of construction planning. This is an .8 percent rise in the total backlog since June, putting the gross reserve now at $45.5 billion, or a little under 6 years of construction at the 1949 rate.

Percentagewise the public and private backlogs gained the same in July (.8 percent), but the public total went up $249 million to $31.3 billion, while private volume increased $119.5 million to a total $14.2 billion.

Highway backlog booms

Proposed highway construction in July boosted the total backlog by nearly $194 million or 52½ percent of the net increase during the month for all classes of heavy construction. This is a 4.5 percent rise in the highway backlog, which now stands at $4.42 billion, not including several state programs where the individual projects have not been designated or released.

The other large contributor to the month's backlog increase was unclassified construction which rose $133.8 million or 3 percent of its total. The backlog of pipelines, transmission lines, etc. now is $4.32 billion.

Revised bidding policy

Corps of Engineers contracts for Veterans Administration Hospitals in the future will be advertised and awarded as single, general contracts including all but elevator installation, in an effort to speed up work on 38 hospitals now under construction or being enlarged, and another 35 now in various stages of planning.

Previously it has been the policy of the Corps of Engineers to invite bids two ways, (1) on the whole job, and (2) on any one or all of four or more separate phases of the work—these being normally the building foundation and superstructure, electrical, mechanical and outside facilities. However it has been the postwar experience of the Corps that in relatively few cases do separate bids combine to produce the lowest total cost. On only six of 30 hospitals let in the past two to three years were separate awards made.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 75, went to press.)

Veterans Hospital—Virginia Engineering Co., Newport News, Va., has been awarded contract for medical and surgical hospital, at Louisville, Ky., by the Veterans Administration, Washington, D. C., at $6,990,000.

Marble Falls and Granite Shoals Dams—Lower Colorado River Authority, Austin, Tex., received low bid for constructing Marble Falls and Granite Shoals Dams from Brown & Root, Inc., Houston, at $2,853,059 and $4,373,640 respectively.

Pennsylvania Turnpike—Pennsylvania Turnpike Comm., Harrisburg, Pa., awarded contract for constructing section of Turnpike in Chester and Montgomery Counties to L. G. De Felice & Son, North Haven, Conn., $4,689,418; and for section in Lancaster County to C. W. Good, Inc., Lancaster, $4,002,735. The Commission also received low bids for the Philadelphia Extension from Johnson Drake & Piper, New York, N. Y., at $2,621,857 and for section in York County from Central Pennsylvania Quarry Stripping Co., Hazleton, at $3,282,516.

Oil Pipe Line—Mid-Valley Pipe Line Co. (Sun Oil Co.), Philadelphia, Pa., and Standard Oil Co. of Ohio, Cleveland, O., awarded contract for section of oil pipe line from Haynesville, La., to Mayersville, Miss., to Latex Co., Houston, Tex., $4,800,000, and for section from Mayersville, La., to Oakland, Miss., to Associated Pipe Line Contractors, Inc., Houston, Tex., at $4,125,000. Other smaller contracts were awarded in the total amount of $10,116,000. The completed line will run from Longview, Tex., to Lima, O. The owners are now asking bids on section from Longview, Tex., to Haynesville, La. The estimated cost of this section is $3,650,000.

Power Plant—F. H. McGraw Co., Chicago, Ill., will construct power plant, for the Dairyland Power Co-Operative, La Crosse, Wis. The project is located at Cassville, Wis., and will cost about $5,800,000.

Housing—City of Boston Housing Authority, Boston, Mass., will open bids Aug. 31, for Cathedral Housing Project in Boston. The estimated cost is $5,000,000. H. F. Kellogg, Boston, is architect and Thomas Worcester, Boston, is engineer on the project.

Shopping Center—Leo F. Corrigan, Dallas, Tex., is asking for bids for the construction of shopping center at Baytown, Tex., to cost about $5,500,000. Harry B. Grogan, Houston, is architect.

Water Purification Plant—Indianapolis Water Co., Indianapolis, Ind., plans water purification plant, to cost about $1,500,000. Alvord, Burdick & Howson, Chicago, Ill., are consulting engineers. Lewis S. Finch is engineer for owner.

Charity Hospital—City of Houston and Harris County, Houston, Tex., plans constructing Charity Hospital, at Texas Medical Center, Houston, Tex., at about $7,500,000. Alfred C. Finn, Houston, is chief architect. H. Edward Maddox and C. A. Johnson, both of Houston, are associated architects.

Island Heights-Seaside Heights Bridge—New Jersey State Highway Department, Trenton, awarded Contract 3 for the Island Heights-Seaside Heights Bridge, Ocean County, New Jersey, to Ole Hansen & Sons, Inc., Pleasantville, N. J., $1,517,667.

Sewers and Road Improvements—City of Canton, O., plans storm water sewer installations to cost $3,000,000 and traffic arteries and improving streets at $1,000,000.

Hotel—Wyandotte Hotel Co., Kansas City, Kan., plans remodeling hotel at about $2,000,000. E. J. Stern, Kansas City, Mo., is architect and Pfuhl & Shiedler, Kansas City, Mo., are engineers.

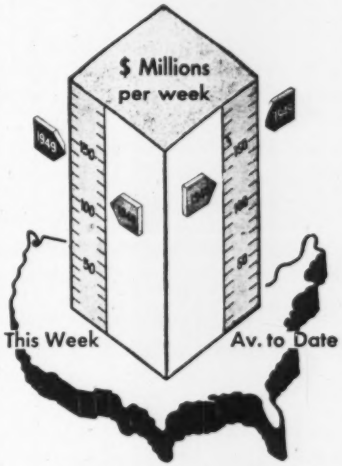
Roads—City of Port Arthur, Tex., plans 100 miles of street plant to cost about $5,000,000. A bond election will be held to vote funds. Charles P. Smith, Orange, Tex., and George Schaumburg, Beaumont, are consulting engineers. M. D. Gates and H. H. Poole, will supervise work for city.

Administration Building—Bureau of Contracts & Accounts, New York State, Albany, N. Y., received low bid from the Mutual Construction Corp., New York, N. Y. at $1,593,450 for the construction of addition to Administration Building at Clinton Prison, Dannemora, N. Y. Eggers & Higgins, New York, N. Y., designed the project.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	Aug. '49	478.28	229.91
Building Cost	Aug. '49	350.72	189.59
Volume	July '49	280	123



Activity This Week

As reported to ENR (in millions of dollars)

Amount of Contracts let

	Week of Aug. 18 1949	Cumulative 1949 (33 wks.)	1948 (34 wks.)	% chge av.wk.
Federal	$12.4	$715.2	$672.9	+9
State & Mun.	69.1	2,072.3	1,667.9	+28
Total Public	$81.5	$2,787.5	$2,340.8	+23
Total Private	55.7	2,425.6	2,174.9	+15
U. S. Total	**$137.2**	**$5,213.1**	**$4,515.7**	**+19**

Contracts by type of work

	This Week	Cumulative 1949 (33 wks.)	1948 (34 wks.)	% chge av.wk.
Waterworks	$3.4	$145.9	$129.8	+16
Sewerage	4.6	168.2	149.6	+16
Bridges	5.8	207.8	190.6	+12
Highways	28.8	607.5	688.4	−9
Earthwork, Waterways	3.5	379.5	338.4	+16
Buildings, Public	33.1	1,072.5	699.2	+58
Industrial	13.8	681.8	640.2	+10
Commerical	27.2	1,468.6	1,244.2	+22
Unclassified	16.9	481.3	435.2	+14

NOTE: Minimum size projects included are: Waterworks and waterway projects, $28,000; other public works, $50,000; industrial buildings, $68,000; other buildings, $250,000.

New capital for construction

	Cumulative 1949 (33 wks.)	1948 (34 wks.)	% chge av.wk.
NON-FEDERAL	$3,463.3	$3,144.5	+13
Corporate Securities	1,620.3	1,451.4	+15
State and Municipal	1,843.0	1,265.8	+50
Federal-Aid Highway	*	427.3	....
FEDERAL	*	1,558.9	....
Total Capital	**$3,463.3**	**$4,703.4**	**−24**

*No federal approp. in 1949 to date.

Derricks Do the Job on Memphis Bridge

CANTILEVER ERECTION of the four lane highway bridge over the Mississippi River at Memphis, Tenn. is notable in two respects—a minimum number of erection bents and an erection schedule requiring six derrick set-ups on the floor steel.

As shown in the accompanying drawing, only two erection bents are needed to span the river—at L27 and L44. Design plans contemplated placing the erection bents at L23 and L40, and cantilevering on over to Piers 3 and 2, respectively. This method, however, would have been slower than the one adopted. By placing the bents at L27 and L44, the contractor is combining cantilver and "balanced" erection to expedite the job.

Three derricks—A, B, and C—are erecting the five-spans (2,825 ft.) of cantilevered trusses, assisted by one derrickboat mounting a stiffleg derrick with 116-ft. boom. The top derricks are identical—120 ft. mast, 110-ft. boom and 40-ton capacity. They operate as travelers on the floor steel, with tie-backs to the top chords.

Simple spans on conventional bents

Erection of the seven truss spans was started at Pier 7. Spans 6 and 7—each a 12-panel 431-ft. simple span—were erected in conventional manner on steel bents placed at the second, fourth and eighth panel points.

Span 5 was erected in similar manner, by Derrick A. With the completed Span 5 serving as an anchor, Derrick A continued on past Pier 4, cantilevering 402 ft. to L23—the closure point for Span 4.

In the meantime, two derrickboats had erected the bent at L27, and had set up Derrick B on two panels of floor steel between bent and pier. During its initial truss erection, this derrick operated as a guy derrick. It was guyed to Pier 2, to the erection bent and to outriggers on the floorbeam over Pier 3. Later, the guys were removed and the mast backstayed to top chords of the trusses.

First closure at L23

Derrick B erected back to L23 and made the closure at that point. Derrick C was set up at L31 and erected balancing steel to L33. In the meantime, Derrick A was dismantled and re-erected at the Memphis abutment (L78). It erected span 1—on land-based bents—and will continue on past Pier 1, cantilevering 395-ft. to L57, the point of final closure.

DERRICKBOATS AND TRAVELERS speed erection of new highway bridge over the Mississippi.

Derrick B was dismantled after making the closure in Span 4. It will be moved ahead to Pier 2 and will erect balanced steel back to L40. Derrick C will continue on past L33, erecting steel to L40—the closure point in Span 3. Then Derrick C will be moved ahead to Pier 2 and will erect balancing steel to L50 and, after closure of Span 3, it will continue erection to final closure of the bridge at L57.

Travelers set-up by derrickboats

The derrick set-ups at Pier 5 and at the Memphis abutment were made by crawler cranes. The other four set-ups, as well as all six derrick-dismantlings will be made by one of the derrickboats. The derrickboats also assist the travelers in erecting the steel, which arrives by barge.

Hoisting and swinging power for the top derricks—when operating as guy derricks—is furnished by hoist-barge anchored beneath the bridge. It is equipped with two special three-drum hoists, each with a 20,000-lb. line pull.

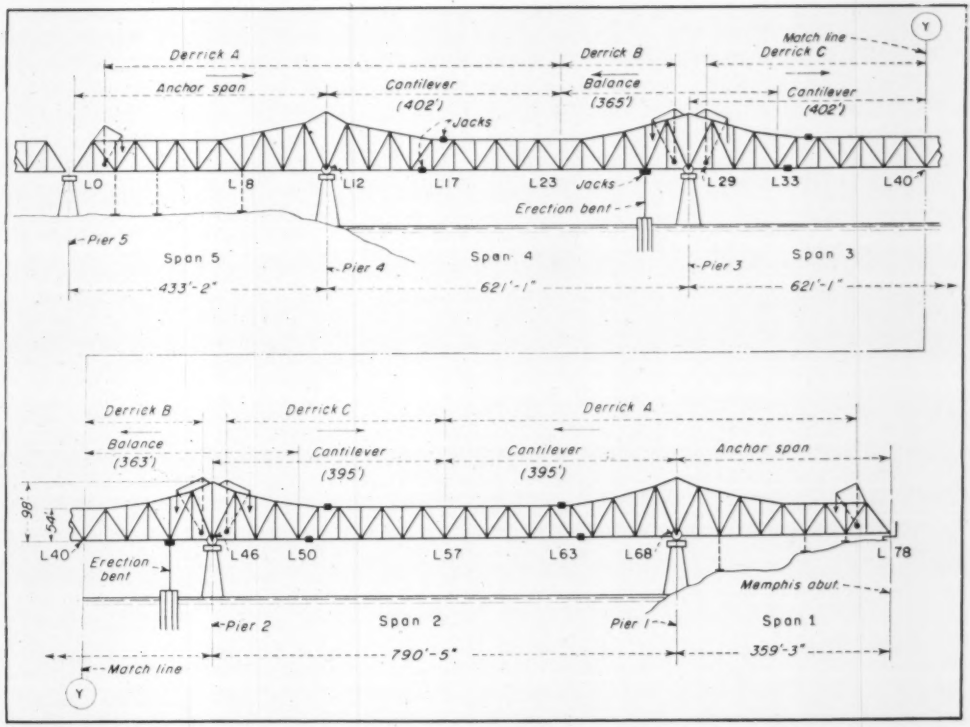
Swinging power for the travelers is supplied by a light-weight air-hoist which follows close behind the derricks as they extend their cantilevered and balanced erection. Hoisting and booming power, however, is delivered by gasoline-driven hoists anchored off the cantilvers, on previously erected steel. This saves weight on the cantilever and reduces erection hazards.

Sixteen 500-ton hydraulic jacks were built especially for the job to make truss closures. For closing Span 4 at L23, special jacking members, containing two jacks each, were erected in truss members U17-U18 and L16-L17. One jack also was placed beneath each truss, on top of the erection bent.

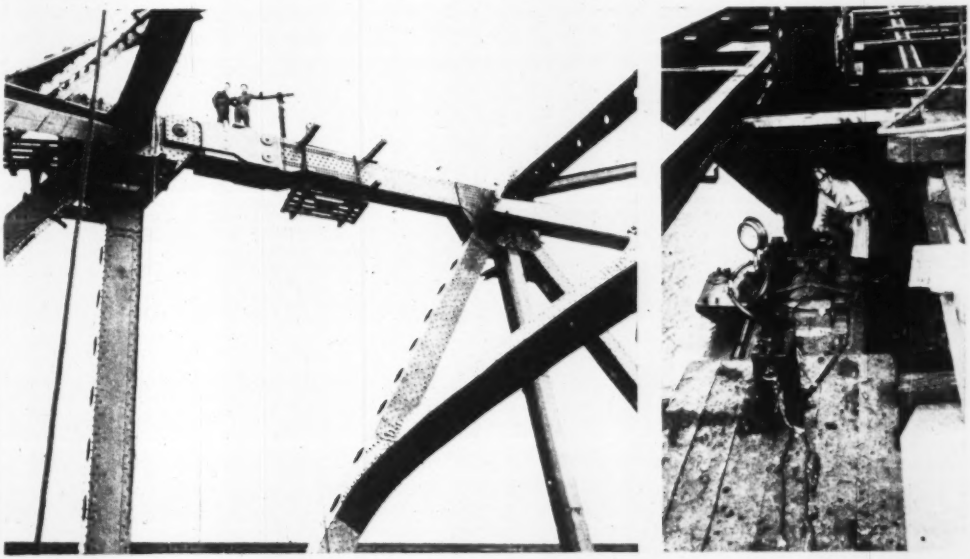
Close Span 2 with 16 jacks

The first two sets of jacking assemblies permitted both vertical and horizontal movement of the cantilevered trusses at panel point 23. The jacks on top of the bent permitted vertical adjustment of the cantilevered portion of the "balanced" erection over Pier 3.

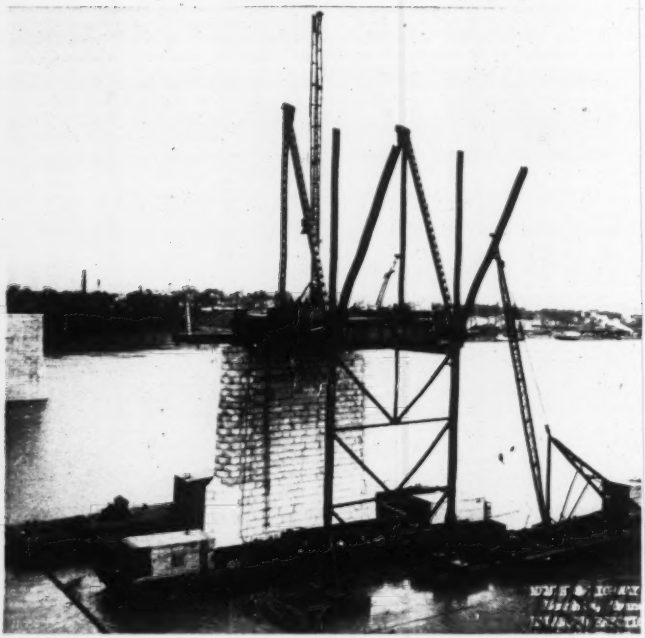
Span 3 will be closed in similar



ONLY TWO ERECTION BENTS are needed to span the river channel of the Mississippi. Three traveling derricks are set up, moved ahead, and dismantled as necessary to keep the job on schedule. Truss closures are at panel points 23, 40 and 57.



TRUSS-CLOSURES for Span 4 were made by 500-ton hydraulic jacks in top-chord members U17-U18 (at left) and in bottom-chord members L16-L17 (at right).



ERECTION BENT at Pier 3 was supported on steel grillages which capped long H-piles driven into the riverbed. Derrickboats erected the bent, two panels of floor steel and set up a guy derrick for erecting trusses by "balancing" over pier and bent.

manner, with the jacks in truss members U34-U35 and L33-L34. All 16 jacks will be used to close Span 2. Two will be placed in each member U51-U52, L50-L51, U62-U63 and L63-L54, in both trusses.

All truss members in which the jacking assemblies are placed, carry zero stress in the completed bridge since trusses between U17-U24, U34-U41 and U51-U63 are, in reality, suspended spans between cantilever arms. Jacking assemblies are replaced with permanent truss members after truss closures have been completed.

The two erection bents in the river are required to withstand high water, swift current, drift, and wind, in addition to the erection stresses. Consequently, they are well braced. Each bent is made up of a bolted steel frame, with steel-beam grillages supported on 32 H-piles driven into the riverbed. The piling was driven through a steel cage which also was anchored with long H-piles to give added stability.

Four-lane divided roadway

The completed bridge will carry two 24-ft. roadways separated by a 3-ft. concrete raised median. There will be a sidewalk along each side of the bridge—5-ft. wide on Spans 1 to 7, inclusive, carried on brackets outside of the trusses. Sidewalk width for the remainder of the bridge will be 6 ft.

Conventional reinforced concrete roadway and sidewalk slabs will be placed on Span 1 to give the required dead load weight in this anchor span for Span 2.

Roadway and sidewalk slabs on the four other cantilever spans, however, will be concrete-filled steel-grid flooring, to reduce dead-load weight. The grid flooring will be welded to its supporting stringers.

The entire bridge is just 60 ft. short of being a mile in length. In addition to the five cantilever and two 431-ft. through truss spans there are: two 175-ft. steel deck-truss spans Nos. 8 and 9; eight 85-ft. deck-plate girder spans; and 480 ft. of reinforced concrete deck-girder spans terminating at the abutment on the Arkansas side of the river.

Contractors on the project

Harris Structural Steel Co. holds a $4,606,000 contract for erecting the five cantilever spans and the two 431-ft. simple truss spans, complete with the concrete and steel deck. Total structural steel in this 3,685-ft. of bridge is 25,300,000 lb. E. L. Guerber is resident engineer for the Harris Structural Steel Co., and R. H. Smith, erection superintendent.

Merritt-Chapman & Scott Corp. built the Memphis abutment and seven main river piers under a $4,333,000 contract, between July 1945 and July 1947. They later built the Arkansas abutment, 9 concrete piers and footings for 15 others, under a $487,000 contract.

W. L. Sharpe, of Memphis, completed the 15 piers and constructed 15 reinforced concrete girder spans for $386,000. His construction superintendent on the job was Lester Talbot.

Virginia Bridge Co., Roanoke, Va., truss spans adjoining Harris' contract holds a contract for two 175-ft. deck- and eight 85-ft. span steel deck girder spans, complete with concrete deck. This $623,000 contract was started in December, 1948, and has 330 calendar days for completion. Harry Perfater is construction superintendent.

Modjeski and Masters, consulting engineers, prepared the design plans for the new Memphis bridge and are furnishing inspection on construction. O. F. Sorgenfrei is resident engineer. The bridge is a joint project between the Bureau of Public Roads, Arkansas and Tennessee, with both Shelby County (Tenn.) and Memphis participating in the cost.

Municipal Employees Rate Wages As Top Factor

Economic considerations ranked first among factors considered most essential to harmonious employee-employer relations by municipal employees of Tyler, Tex.

A nineteen-item checklist of considerations essential to good work relations was submitted to the city's 350 employees, who were asked to check ten items in order of their importance for job satisfaction. Of the top factors listed, six were non-material and four were economic incentives.

Results of the poll were tabulated by departments, by age groups, by tenure of office, and then recapitulated into a composite picture.

The ten top factors in preference order were: wages; retirement system, with city sharing cost; vacation and sick leave privileges; job security; cooperation of fellow employees; group life and hospital insurance, city sharing cost; equal opportunity for promotion; opportunity to learn and understand job of whole department; good working conditions; and reward or credit for work well done.

Money-Saving Structural Details Lead New Trends in Textile Mill Design

RE-EXAMINATION of current textile mill design in the South indicates the emergence of newer trends that make for greater economy in construction.

These represent changes in details only from those reported in "New Trends Develop in Southern Textile Mill Design," ENR May 15, 1947, vol. p. 805. That article pointed out that air conditioning has affected the design of these plants to the extent that windows were reduced to a minimum and floors, walls and roofs were insulated. Generally located in rural areas, the buildings were mostly one-story high. Frames were of structural steel, with riveted connections. Walls were faced on the inside with glazed structural tile and on the outside with brick. Roofs were flat and generally of wood or precast concrete surfaced with builtup tar- and gravel-roofing. And floors were most frequently of tar-concrete finished with hard maple.

The trends making a strong appearance in 1949 can probably best be illustrated, for comparison, by a typical design, such as that of the Cranston Print Works at Fletcher, N. C.

Air conditioning

Windowless, this mill is illuminated by fluorescent lighting to intensities of 10 to 30 ft.-candles and is air conditioned by evaporative cooling. Refrigeration was not deemed necessary, since Fletcher is about 3,000 ft. above sea level and summer temperatures are not excessively high.

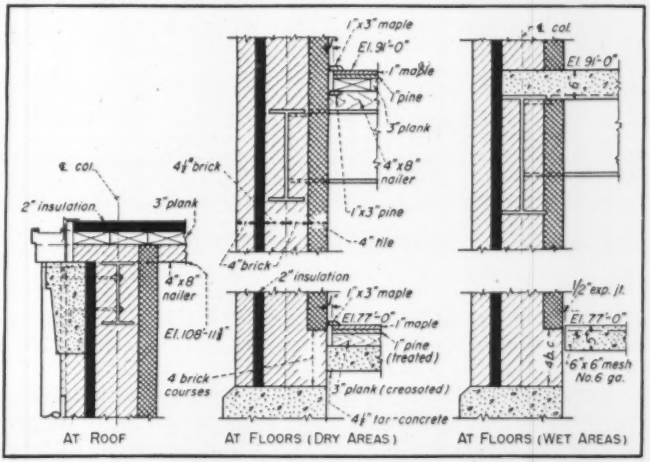
The building is one-story, rectangular in plan, 423 x 323 ft., with a 60 x 323-ft. mezzanine along one end. It has a structural steel frame. Column spacing is 20 x 20 ft. under the mezzanine and 20 x 40 ft. elsewhere.

A major break with the past is made in the roof framing. Hung girder spans are used in lieu of simple spans. Alternate girders are 56 ft. long, overhanging the columns 8 ft. on either side to pick up the 24-ft. hung spans. Being continuous over the columns, the girders—mostly 21-in. 62-lb. wide-flange beams—are lighter than conventional practice would have dictated.

They carry 12-in. WF 27-lb. purlins at 10-ft. intervals. In turn, the purlins support 4 x 8-in. nailers; a 3-in. deck; a vapor seal consisting of a layer of heavy building paper and four plies of 15-lb. felt; 2 in. of cork-board insulation and 20-year bonded pitch and slag roofing. The deck is made of salt-treated wood, kiln dried to a moisture content not over 19 percent to be sure that the salts are thoroughly set. The salts are used for preserving alone. (Insurance companies usually do not give a better rate for fire-retardent treated wood.)

Because of the size of the building, a transverse expansion joint was located about midway of the length. Also, the steel frame and roof deck were completely erected before the masonry was placed, to prevent expansion and contraction strains due

THE STEEL FRAME AND ROOF DECK of the Cranston Print Works, Fletcher, N. C., were completed before the masonry walls.



WALL DETAILS used in Cranston Print Works. Of particular interest are the expansion space between floor and wall in dry areas and starting of tile backup at floor level.

to day-night temperature differentials.

Floors on ground consist of a 4½-in. tar-concrete base, 3-in. creosoted plank, 1-in. treated pine subflooring and a 1-in. maple finish. The tar-concrete base is omitted on the mezzanine. In wet areas, a 5-in. wire-mesh reinforced concrete slab is used on the ground and a 6-in. slab elsewhere.

Walls are 8-in. brick, faced on the interior with 4-in. glazed tile. On the outside is 2 in. of cellular-glass insulation and a 4-in. brick exterior facing.

Unusual wall-floor detail

The detail at the intersection of ground floor and exterior walls represents another departure from conventional practice. Here, in the dry areas, the wood floor is stopped short of the wall to form a 1-in. expansion space. The tile facing is started at the level of the subfloor, brick being used between this point and the wall footing, and the space between wall and floor is covered by a 1 x 3-in. maple strip. The cellular-glass is carried down to the top of the foundation wall, 12 in. below the surface of the floor.

In the wet areas, a ½-in. expansion joint is provided between the wall and concrete slab at ground level instead of the air space. But here, too, the tile is started near the top of the floor.

J. E. Sirrine Co., Greenville, S. C., was architect-engineer for the Cranston Print Works and Potter & Shackelford, also of Greenville, were general contractors.

Look at entire field

A study of the entire current textile construction picture shows that increase in cost of maintenance is higher, proportionately, than increase in cost of new construction. Therefore, there is no economy in the use of cheaper and less durable materials. Replacements and repairs require more labor than the original construction.

Because labor rates are so high, it is economical to use only the best available material and to follow the soundest construction principles. Only where need for a building is temporary—or where there is uncertainty about the final requirement—can the use of inferior materials be justified. This interest in correct design and durable materials has influenced the engineering involved in new plants and improvements to existing ones. Makeshift arrangements, which might serve if they were easy to replace at any time, can no longer be held economical.

New Flow Meter Cuts Costs; Simplifies Installation Problems

R. E. Tarring
Chief Engineer
Instrument Associates, Inc.
Brooklyn, N. Y.

A NEW SHORT-LENGTH FLOW TUBE that promises reduced first and operating costs, wide range, flexibility and high accuracy is now available.

The flow tube is simply a short length of pipe with two groups of pressure ports on its inner machined periphery. One group of three ports points upstream; the other three downstream. Ports are connected by annular manifolds around the tube. Up- and downstream pressures are averaged in the manifolds and transmitted through them to a conventional indicating, recording or integrating meter.

Functional theory

Theory of operation of the new tube —which utilizes velocity near the wall as the criterion of flow is: Assume flow direction is from left to right in Fig. 2. The total impressed head on the nozzles pointing upstream is equal to the static plus velocity head: $h = S + V^2/2g$ where h is the total head; S, the static head; and $V^2/2g$, the velocity head at the nozzles, all in feet.

Similarly, the total head of the nozzle group pointing downstream is static minus velocity head (h'), or $h' = S - V^2/2g$. Effective head on the meter is the difference between h and h', $H_m = h - h' = (S + V^2/2g) = (S = V^2/2g) = 2V^2/2g$.

The meter, therefore, records a differential proportional to upstream and downstream velocity heads. This differential is converted into average velocity or quantity flowing per time-unit by suitable calibration.

While it is well-known that velocity immediately adjacent to the pipe wall is zero for any laminar or turbulent—flow condition, velocity gradient is so steep at the wall for turbulent flow that velocity jumps almost abruptly from zero to about 75 percent of the average across the cross section. As an example, velocity ½ in. from the wall is about 7½ fps. in a 12-in. pipe carrying an average of 10 fps. This ratio applies to uniform continuous flow in all pipes with at least 50 diameters from any bend, valve, reducer or other special.

Uniform velocity distribution

Velocity distribution at a pump discharge or other contraction is almost uniform across the entire section, in which case wall velocity is virtually equal to the average of the cross-section. The differential will, therefore, vary from slightly more than one to two average velocity heads depending on the installation.

As a matter of fact, a standard meter could be installed full size (without contraction) and still give readings precise enough for practical purposes.

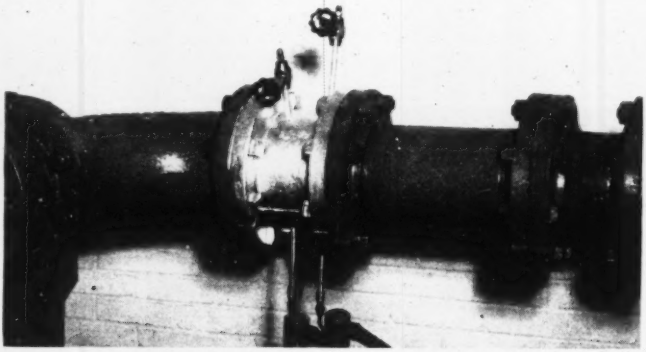


Fig. 1 BETH FLOWTUBE, which occupies a small amount of space, may be readily inserted in many complicated pipe systems and at advantageous point on the hydraulic gradient (Bethlehem Foundry & Machinery Co. photo).

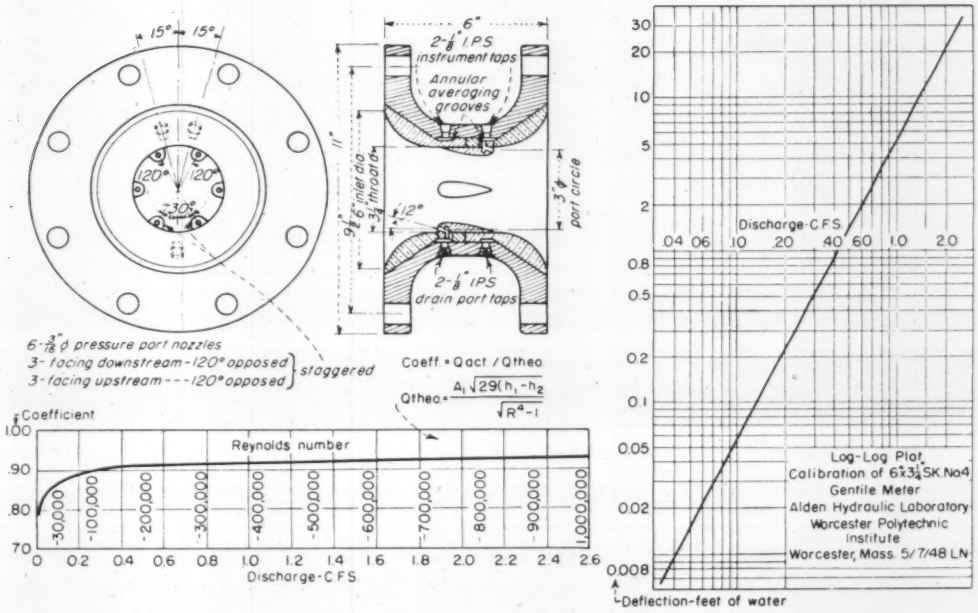


Fig. 2 **FOR WATERWORKS SERVICE**, type "D" meter provides a high differential, minimum contraction and a flow range greater than 50 to 1.

For example: A water velocity of about 6 fps. will give a differential of about seven inches of water. In addition, it will accurately record a differential as low as 0.125 in. of water, corresponding roughly to a 0.5 fps. flow.

The three basic types of meters are classified according to the differential-pressure origin: Type "D" relies on dynamic impact; type "V" employs viscous drag at the boundary layer; and type "VD" represents a compromise between types "D" and "V", the differential being produced by a combination of dynamic and viscous forces.

Advantages summarized

Due to its short length and light weight, the new meter offers several advantages: Substantial savings in shipping, first and installation costs; and utilization in restricted pipe layouts. Its short length permits insertion in complicated pipe systems and at the most advantageous point on the hydraulic gradient. Accuracy is not lost and expensive revamping of the system is avoided. Straight pipe-runs—before or after elbows, tees, crosses or other fittings—are not required. The only limitations on straight runs are valves and regulators.

The streamlined interior of the meter allows not only measurement of flows in either direction but also use of low main-to-throat ratios (high Beta) with negligible unrecovered pressure loss. The latter factor makes a big contribution to reduced pumping costs.

With purging or back-flushing, the flow meter may be used to measure flow of fluids containing entrained solids. In large sizes, the manifolds are external and arranged so that cleaning presents no problem. A properly designed and installed purging system will keep the meter and primary passages clear.

Each of the three types of meters available is designed to accommodate a particular class of service. Type "D" is the most suitable for waterworks practice because of a high differential, minimum contraction and a flow range more than 50 to 1. This range of flow is conservative (log plot) and wide enough to cover most normal installations.

For hydroelectric measurements, type "V" provides differentials varying from 50 to 200 inches of water. The contraction is so slight that unrecovered loss will be almost zero (loss due only to friction in equivalent length of pipe).

A versatile unit, type "VD" finds best application for gaging gas and steam flows. This tube may be modified to assure proper drainage consistent with operating conditions that will be met.

Sizes and materials

All types of the new flow meter are furnished in standard diameters. They are manufactured of all available castable and machineable materials that may be required for specific operating conditions. Jointing is by flange, bell-and-spigot, welding or other type of end fitting.

The three types of flow tubes are suitable for operation with all standard secondary registers. It should be noted that overall accuracy of the complete installation is governed by accuracy of the register because tube differentials (log-log plot) are proportional to a constant power of the velocity.

The new tube offers an excellent solution for fluid-flow measurement, control and regulations problems. With its wide range, small size and flow reversibility, the tube may be successfully employed wherever operation of supplementary devices dependent on an accurate differential is of primary importance.

The patented Flowtube is manufactured by the Bethlehem Foundry & Machine Co., Bethlehem, Pa.

Testing A Digestor-Cover Ceiling Plate

John R. Grandinetti
Mechanical Engineer
Department of Public Works
Philadelphia, Pa.

VACUUM-INDUCED ATMOSPHERIC PRESSURE was the quick, cheap "load" for a structural test of a partially completed floating digestor cover at Philadelphia's newly-built Northeast sewage plant.

This full-scale test—on one of the world's largest units—was performed at maximum design load to measure actual stresses in the ceiling plate on the underside of the cover. Stresses in the plate were measured by electrical strain gages.

The 110-ft.-dia. floating cover (which collects gas escaping from digesting sludge) consists of a metal gas dome, 22 radial steel trusses, a roof, ceiling plate and a rim plate (Fig. 1a). Top chords of trusses slope to the circumference of the tank from the centered dome. They are covered with a wood roof and composition roofing to form a flat cone. The ceiling plate is welded to the horizontal lower chords of the trusses to form a gastight surface. The cylindrical rim plate incloses the space between the upper and lower chords adjacent to the circular-tank wall.

The entire cover floats on top of the sludge in the tank under normal operation and is supported at its lowest elevation by brackets—one to each truss—on the concrete wall.

Checking allowable stresses

When the first cover was being erected, the city's engineers elected to check maximum unit stresses in the manufacturer's design. This check was made not only to insure compliance with the specifications but also to make sure that no changes in design were required before the remaining covers were put up.

The trusses, gas dome and rim plate, being symmetrically arranged, were readily stress-analyzed by conventional methods.

The ceiling plate, however, is divided by the trusses into circular sectors with varying spans from the center to circumference. In addition, the ceiling plate is made up of a series of plates joined to each other and to the trusses by single-fillet welds on the top side of the plates. The support arrangement and type of connections introduced so many unknowns and so much speculation regarding fixity and yielding at connections that the ceiling plate did not lend itself to precise stress analysis.

Several analytical methods were tried to determine unit stresses in the ceiling plate. Because the analytical assumptions were open to question, these methods could not be accepted as the final arbiters of the adequacy of the design. It was therefore decided to test the covers under full load, obtain strain measurements by electrical gages and compute actual stresses in the ceiling plate.

When the test was made, the trusses, ceiling plate, gas dome, and purlins were completely erected in one tank. This structure weighed about 230,000 lbs. giving a unit loading of about 25 lbs. per sq. ft.

The wood sheathing and roofing had not been placed on the cover, and the snow and wind loads were not acting. These loadings—about 40 lbs. per sq. ft.—had to be added as dead weight to the erected structure to load the ceiling plate for test equivalent to that obtained under operating conditions.

To run the test with the full ceiling-plate loading shown in Fig. 1(c), additional heavy weights amounting to about 190 tons, would have had to be uniformly distributed over the trusses. This requirement introduced problems of type, handling, distribution and anchoring of the weights on the trusses. A quick estimate indicated that an appreciable expense would be involved if the structure was loaded with temporary weights.

After considerable study, it appeared feasible to induce a vacuum below the ceiling plate, thus bringing atmospheric pressure into play as the load.

It can be seen in Fig. 1(a) that the bottom of the rim plate is 13 in. below the level of the ceiling plate. This permitted the annular clearance between the rim of the cover and the tank wall to be sealed off when the cover was supported on the brackets and the tank filled with about two million gallons of water. Fortunately, the rim plate, ceiling plate, and gas dome were constructed water- and gastight, allowing a vacuum to be drawn under the ceiling plate by withdrawing water from the tank.

The upward loading on the ceiling plate when the structure is normally loaded and floating on the liquid in the tank is shown in Fig. 1(c). The downward loading on the ceiling plate when vacuum is drawn within the tank is shown in Fig. 1(d). It is obvious that in one case the deadweight of the ceiling plate opposes the loading, and in the other, adds to the loading.

During the test, the structure was supported on the tank brackets and its entire deadweight carried by the tank wall. It was therefore necessary to draw a vacuum of such magnitude to fully load the ceiling plate, simulating operating conditions. This amounted to 8.6 in. of water column, equivalent to 45 lbs. per sq. ft.

Preliminary test required

The strain gages for the test were to be located on the top side of the ceiling plate. Under vacuum loading, the plate would deflect downward or opposite to that under operating conditions. The question then arose, whether maximum fibre stresses would be induced on the convex side of the ceiling plate which the gages would measure, or on the concave side (underneath) where no gages were located.

To clear up this uncertainty, preliminary test was carried out by loading a portion of one sector of ceiling plate with 94-lb. cement bags, with the cover resting on the concrete brackets. The cement-bag loading amounted to about 47 lb. per sq. ft.

Two tri-axial type strain gages were carefully attached on the ceiling plate at the point of assumed maximum deflection—one on the top surface of the plate and the other exactly below it on the bottom surface. This permitted measurement of fibre stresses on the top and bottom surfaces simultaneously and comparison of results to determine which stress was the greater.

Results of the preliminary test indicated the maximum principle fibre stress was induced on the top surface of the plate. Observation of stress values along each axis of the tri-axial gages also indicated that, because of the symmetry of the structure and uniformity of loading, bi-axial gages would give sufficiently accurate results for the final test.

The magnitude of stresses obtained in the preliminary test was less than that obtained in the final test for comparable loading. This was due to the fact that loading was local and not over the entire plate, contribution of adjacent unloaded structure, and lack of tangential tension restraint due to partial loading.

The determination of the surface with the maximum principle stresses

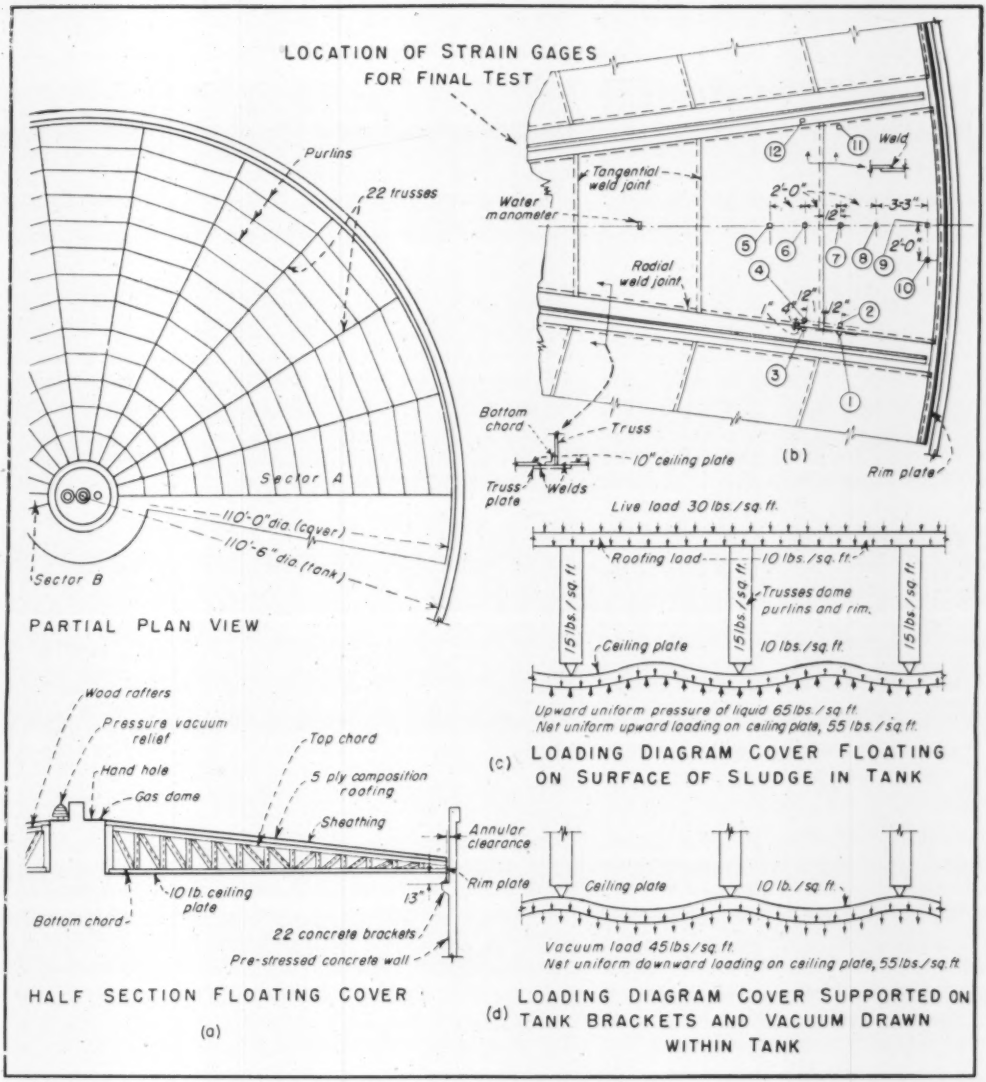


Fig. 1. Stresses in the ceiling plate of a floating sludge-digester cover were calculated from electric strain-gage readings. Atmospheric pressure loading was applied by inducing a vacuum under the plate.

and the indication that less expensive bi-axial gages would give satisfactory results in the final test, well repaid the cost of the preliminary work.

Final test outlined

After the preliminary test and the rim, ceiling plate, and gas dome had been checked for gas- and water-tightness, the final test was carried out in the following steps:

1. The floating cover was supported on wall brackets throughout the test.

2. The surface of the plate at gage locations (Fig. 1b) was carefully cleaned before bi-axial gages were cemented on the upper surface of the ceiling plate. Twelve gages were spotted at strategic points on each of two sectors of the plate (180 deg. apart), waterproofed with neophrene after attachment and allowed to stand 24 hr. before the test loading was applied.

3. A bi-axial gage was also attached to each of two pieces of ¼-in. plate about 12 in. square, and of the same material as the ceiling plate. Attached to unstressed plates, these gages served as dummies to record stresses induced by temperature change during the test and to correct test gage readings. A "dummy" gage was located in each sector of ceiling plate under test.

4. Wiring from all strain gages was connected to a multi-channel strain recorder.

5. A water manometer was installed in each sector under test, by drilling a

$\frac{3}{8}$ in. hole in the ceiling plate and welding a $\frac{3}{8}$ in. riser pipe for attachment.

6. The handhole at the gas dome of the cover was opened and the interior of the digester was filled with water through wall castings at the bottom of the tank, to about three inches below the ceiling plate at the rim.

7. The handhole was then shut tight and water added to the tank until the manometer read 2 in. of water-column pressure.

8. Since 2 in. of water-column pressure just relieved the deadweight load of the ceiling plate (10 lbs. per sq. ft.), the strain gage readings at this pressure were recorded as zero readings.

9. Keeping the handhole in the gas dome shut tight, a vacuum was then gradually drawn on the interior of the tank by withdrawing water.

10. Vacuums up to 9 in. of water column were drawn, and three sets of strain gage readings were recorded for all gages at every two inches of vacuum. Strains were also recorded at 8.6 in. vacuum, corresponding to a loading on the ceiling plate of 45 lbs. per sq. ft., the assumed maximum loading under operating conditions.

11. After the test, strain gages and manometer risers were removed, and the two small holes in the ceiling plate repaired by welding.

12. Stress values were then calculated for strains induced under all loadings. The strains and calculated stresses for the last three loadings at all gage locations are listed in Table I.

Table I—STRAINS AND STRESSES INDUCED IN CEILING PLATE UNDER APPLIED VACUUM LOADINGS (INCHES OF WATER COLUMN)

Gauge Locations	Direction of strains & stresses	STRAINS (10^{-6} Inches/Inch) 8" Vacuum	8.6" Vacuum	9" Vacuum	STRESSES (PSI.) 8" Vacuum	8.6" Vacuum	9" Vacuum
SECTOR A							
1	Radial	91	102	105	7,690	8,420	8,550
	Tangential	500	540	542	16,800	18,180	18,280
2	R	93	110	110	2,800	3,350	3,250
	T	-15	-18	-28	415	480	160
3	R	168	180	190	11,100	12,060	12,470
	T	600	660	670	20,700	22,780	23,190
4	R	190	200	200	6,060	6,480	7,240
	T	0	10	90	1,820	2,230	4,790
5	R	-20	-10	-10	830	1,440	1,530
	T	154	184	194	4,720	5,770	6,090
6	R	100	90	100	3,830	3,510	3,920
	T	68	68	78	3,120	3,030	3,450
7	R	202	258	212	8,250	10,140	8,870
	T	190	200	220	8,000	8,870	9,060
8	R	-14	-14	-14	1,820	2,010	2,070
	T	238	258	264	7,460	8,100	8,290
9	R	106	106	184	5,490	5,550	7,980
	T	220	228	220	8,040	8,300	8,770
10	R	190	230	290	7,550	8,740	11,130
	T	158	148	196	6,850	6,920	9,030
11	R	34	34	34	1,020	1,020	1,050
	T	-6	-6	-4	130	130	190
12	R	56	58	58	6,500	6,600	6,600
	T	488	498	498	16,100	16,430	16,430
SECTOR B							
1	R	50	59	60	7,050	7,660	7,750
	T	570	602	610	18,700	19,780	20,030
2	R	60	51	40	2,340	2,010	1,750
	T	45	40	50	2,010	1,750	1,980
3	R	60	59	50	7,950	8,130	8,100
	T	630	652	680	20,650	21,370	22,170
4	R	160	174	180	5,100	5,390	5,550
	T	0	-15	-20	1,530	1,180	1,090
5	R	50	51	50	2,070	2,070	2,070
	T	50	50	50	2,070	2,070	2,070
6	R	50	51	51	2,260	2,300	2,330
	T	70	72	74	2,710	2,780	2,840
7	R	210	212	224	8,300	8,420	8,710
	T	165	172	165	7,280	7,530	7,400
8	R	-24	-21	-14	1,500	1,600	2,010
	T	236	245	256	7,310	7,620	8,040
9	R	290	312	320	11,400	12,120	12,570
	T	226	225	246	9,990	10,130	10,910
10	R	420	440	460	14,820	15,470	16,300
	T	150	151	170	8,800	9,030	9,830
11	R	20	22	30	540	770	1,020
	T	-10	7	7	-130	450	510
12	R	110	111	100	8,000	8,230	8,070
	T	470	492	510	16,000	16,750	17,230

What was learned from the test

Stress computations show that increase in loading does not induce corresponding linear increase in stress expected from the theory of bending of plates with large deflections. In addition, induced stresses at similar points on the plates are not always of the same sign as would be expected in a symmetrically supported plate under hydrostatic pressure. These variations show the effect of discontinuities at joints and supports in a plate structure of this type, which cannot be accounted for in a theoretical analysis.

The effect of the weld joints is clearly seen from the stress data. At tangential-weld joints, tangential stresses are somewhat relieved by the extra joint material. The radial stresses at these joints are increased on one side of the weld, and decreased on the other by bending induced in transferring tension through a lap joint.

At radial-weld joints (at truss plates), effect of bending is exerted on tangential stresses primarily, and the extra joint material reduces radial stresses. It is obvious in this structure that weld joints permit local bending with consequent increase in stress.

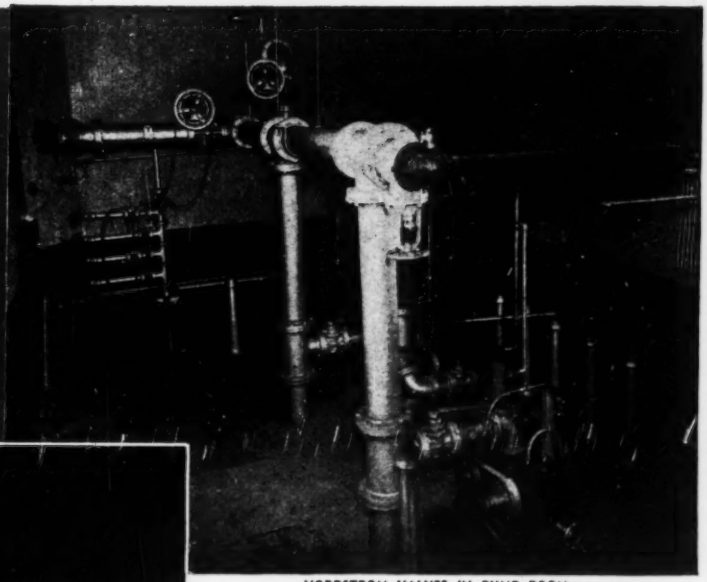
Maximum stresses were found to be the tangential tensile stresses adjacent to the trusses. These stresses comprised, in part, membrane tensile stress in the plate induced by diaphragm action, and, in part, local bending stress due to fixity of the plate at the trusses. It is significant that at locations where stresses were maxima and the effect of various dissymmetries is lease, results are consistent and in good agreement.

In the calculations, no attempt was made to correct for the difference between apparent and true strain, prestraining, weathering and misalignment. If stresses induced by such strains were present, numerous tests conducted by the National Advisory Committee For Aeronautics indicate they would cumulatively amount to no more than two or three per cent, and were considered negligible.

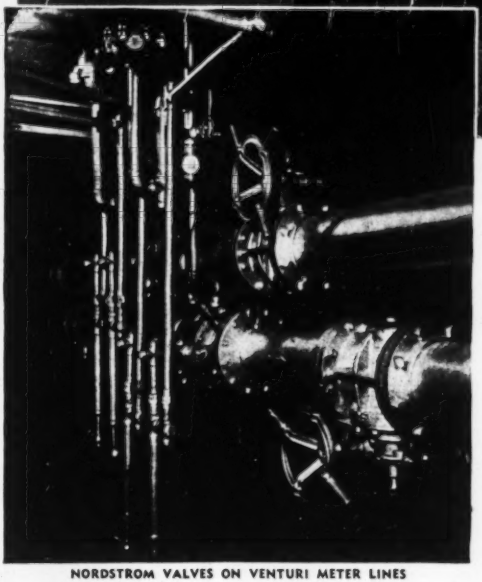
The maximum stresses revealed by the test were slightly in excess of the values specified for the structure. Since these stresses were located at only a few local points and the stresses throughout the greater part of the plate were of low magnitude, the 10-lb. ceiling plate was considered adequate.

The gages used for the ceiling-plate test were type SR-4 manufactured by Baldwin Locomotive Works. The floating covers were designed and built by Pacific Flush Tank Co., Chicago.

KEEP UPKEEP DOWN in sewage disposal



NORDSTROM VALVES IN PUMP ROOM



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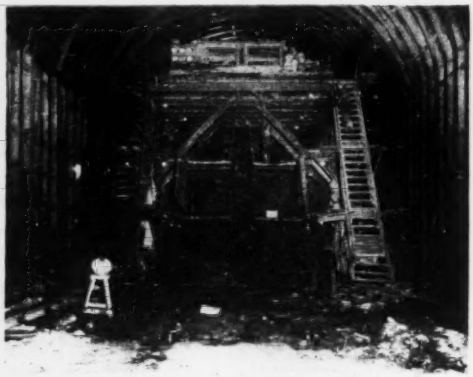


A FOUR-LEVEL JUMBO mounts 15 rock drills for boring 210 holes in a 36x35-ft. tunnel face. After blasting . . .

A DIESEL SHOVEL moves up to the face to load muck on 15-ton dump trucks for a 14-ft. advance, in . . .

Driving A Record-Size Railroad Tunnel

DYNAMITE AND DIESEL SHOVELS ARE gouging out treacherous rock in the Appalachian Mountain coal-mine area to form one of the world's largest railroad tunnels.

The full face is being drilled from giant jumbos, working from both ends. Steel liners on 30-in. centers, for bracing the roof, are set within a few feet of the face before each blast. Then, 210 holes are fired to advance the face about 14 ft.

The bore is horseshoe-shaped—36 ft. wide by 35 ft. high—and 7,052 ft. long. Replacing the existing single-track Elkhorn Tunnel, it will carry the double-track (Pocahontas Division) main trunk line of the Norfolk and Western Railway Co. through Flat Top Mountain, near Bluefield, West Virginia. It is part of a relocation project on which about $12,000,000 will be spent to construct 5.28 mi. of new track between Cooper and Lick Branch south of the present line.

The existing road rises from the hamlet of Cooper to the west on a 1.10 percent grade and from Lick Branch to the east on grades up to 2.0 percent. It incorporates curves as sharp as 13 deg. In between is a 1.40 percent grade. Here the line narrows to single track to pass through the old 3,015-ft. long Elkhorn Tunnel.

New line shortens run

In contrast, starting at the western portal of the Cooper Tunnel, the new double-track road will ascend to the west on a 0.50 percent grade. It will rise to the east from Lick Branch on a 1.40 percent compensated grade. Between these two stretches, it will slope downward to the west on a one percent grade and pass through Flat Top Mountain in the new tunnel.

Advantages are: Elimination of the major traffic bottleneck at the old tunnel, shortening of the run by 1,900 ft. and lowering of the summit by 63 ft. Grades will be flattened to a maximum of 1.40 percent and curves limited to a maximum of 4½ deg., thus permitting the handling of more tonnage per locomotive. In the process, about 1,600,000 cu. yd. of material will be moved.

Tunnels cut through coal seams

The old Elkhorn tunnel, which will be abandoned, dates back to 1888. A major milestone in the development of the N&W Railroad, it enabled the line to go through the Appalachian barrier and extend service to the rich coal fields to the west. Its construction was highlighted by the mining of a 10-ft. thick seam of coal that extended the full length of the bore. The coal was sold by the contractor to cut tunneling costs.

The new tunnel also passes through coal seams—principally Pocahontas No. 2—but mining the coal was not found practical.

Most of the excavation is through sandstone, with some shale and slate being encountered. This material requires continuous support. Blasting of more than 14-ft. lengths is generally considered unsafe.

Work started at the west portal, with steel liners being cautiously set 18 in. apart. After a short distance had been excavated, the spacing was lengthened to 30 in. with safety.

The liners are 8-in. 35-lb. wide-flange beams. Coming to the job in four sections—two posts and two quarter-circle arcs—they are bolted, when placed, to form the rings. The posts are raised by hand and set on 6x12-in. timber sills. The arches are placed by crane, with use being made of the jumbo in positioning them. Tie rods ¾ in. in diameter and 4x4-in. hardwood toggleblocks are inserted between them at about 5-ft. intervals to maintain the spacing and absorb the impact from shooting.

Timber blocking is wedged between the liners and the rock at various intervals. About 400 bd. ft. of timber are used per linear foot of tunnel.

Face drilled from 5 levels

The face is drilled from the ground and from four levels of a jumbo equipped with 15 water-line pneumatic drills. Shaped to act as a template for the bore, this machine has a frame constructed of 10-in. H-beams that supports 4-in. oak platforms. It weighs 32 tons and moves on six cast-steel wheels over two 100-lb. rails on the subgrade.

The platforms at the first and second levels are hinged. When used for drilling operations, they are suspended from the third-level platform framing. During the mucking period, however, they are dropped down to permit shovels and trucks to pass un-

dernеath the jumbo. The top platform, located under the center of the arched roof and much smaller than the others, is supported on the third-level platform.

Drills are equipped with 2⅞ to 1¾-in. detachable bits, which are used with 30-in. changes.

A total of 210 holes, varying from 3 to 18 ft. in depth, are drilled per shot, and loaded with 1,800 lb. of 40-percent glycerine dynamite. After the jumbo has moved back a safe distance, this charge is fired by electric blasting caps in 440-v. parallel connection with ten delays at one-second intervals.

Diesel equipment operates at face

About 700 cu. yd. of muck has to be removed after each shot. For this purpose, a tractor-type diesel shovel, with a 2¼-cu. yd. dipper moves up to the face to load onto 15-ton back-dump, diesel-operated trucks. The width of the bore permits these rubber-tired trucks to turn around and back up to the face alongside the shovel. A diesel-powered tractor assists the mucking, maintaining haulways and shifting tunnel-driving equipment. To permit the operation of diesels at the face, centrifugal blowers operated by 200-hp. electric motors supply 21,000 cfm. of air through 30-in. pipe for ventilation.

Completing the cycle, which takes 8 hr. the jumbo moves back to the face for the placing of the liners and the drilling.

Supply lines extended to east face

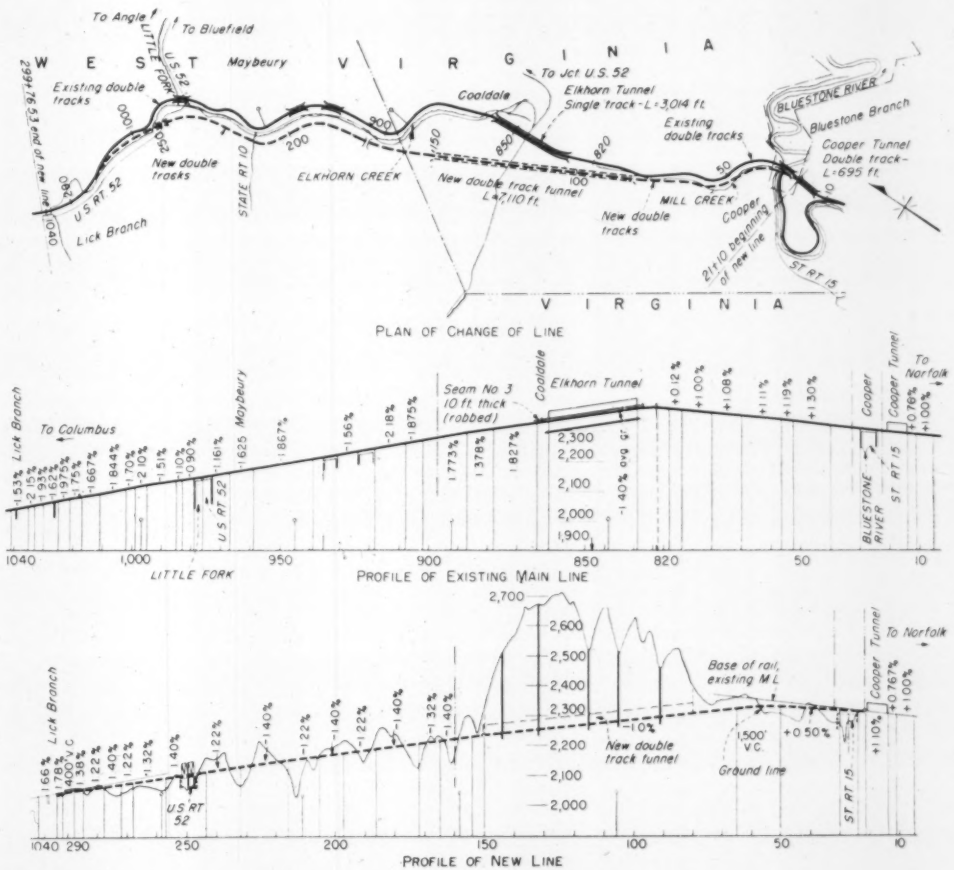
The contractor's main plant—offices, dormitories, dining room, and carpenter and smith shop—are near the west portal. Electricity at 66,000 v. is available and is stepped down to 2,300 v. Here, too, are located the battery of eight compressors that furnish the compressed air.

When work started at the east portal, power and compressed air lines were brought over the mountain from the west side. Because of the distance from the main plant on the west, progress is not as rapid in the east heading as in the west. The face is blasted only on alternate days, the drill shifts being staggered at the two headings so that only one drilling operation is performed at a time.

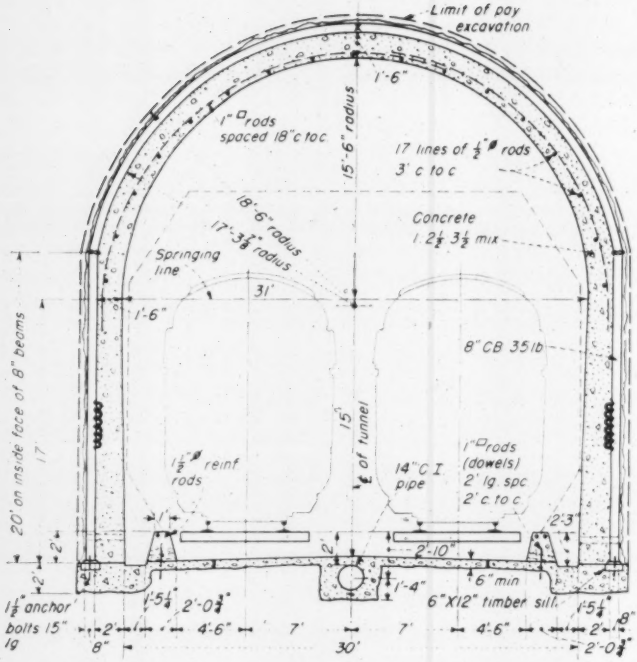
Aside from the slower schedule, the procedure followed in the east heading differs from that in the west by an additional step—drainage. Since the subgrade slopes downward to the west, water flows toward the face in the east heading and has to be pumped out.

Future construction steps

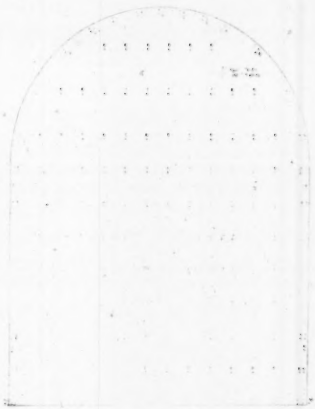
Work on the tunnel started Jan. 9, 1948, at the west end and Sept. 24



PLAN AND PROFILES of the change of line and grade of the Norfolk & Western, Cooper to Lick Branch.



THE HORSESHOE-SHAPED TUNNEL will have a concrete lining from 18 to 24 in. thick inside the 8-in. steel liners.



DRILL PATTERN used in the new Elkhorn tunnel. The contractor normally drills a 15-ft. round to pull 14 ft.

at the east end. The tunnel was holed through in July.

Then, the concrete lining operation began. Along the arch, concrete will be 18 in. inside the face of steel, but it will be thickened gradually along the posts to 24-in. at subgrade. The invert will be a minimum of 6 in. thick. Concrete footings will be about 4½ ft. wide and 2 ft. thick.

The tunnel will have an area of 835 sq. ft. Clear width will be 31 ft. at the springing line, height between base of rail and the semi-circular arched roof 30½ ft.

The arch will be reinforced longitudinally with ½-in. round tie rods spaced 3 ft. apart and transversely with 1-in. square bars 18 in. on centers. The latter rods will curve from near the outer face of the concrete at the springing line to near the inner face at the crown.

Ballast will be spread over the invert to a depth of 18 in. and a width of 23 ft. between concrete curbs. The spaces between the curbs and sidewalls will form 2-ft. 6-in. deep gutters for drainage. A 14-in. cast iron water-supply line will be concrete incased, under the center of the invert.

First step in concreting the tunnel will be casting of a 6-ft. wide strip of the invert along both sides to provide support for movable formwork on tracks, together with a 2½-ft. high pour of the sidewalls.

The sidewall and arch lining pour will then be accomplished by use of two 45-ft. long movable steel forms, one to begin at the extreme east end, the other at the midpoint of tunnel, both working westward. Concrete will be placed by means of double, electric concrete pumps to be supplied by 4½ cu. yd. capacity truck mixers from the main batching plant in the west end of tunnel.

The project is being carried out for the Norfolk and Western Railway Co. under the supervision of A. B. Stone, and W. L. Young, chief engineer and assistant chief engineer, respectively. B. E. Crumpler, assistant engineer is responsible for field supervision of construction, and C. W. Fiery, resident engineer, for the tunnel work.

General contractors for the project are Sturm & Dillard Construction Co., Columbus, Ohio for whom J. H. Adams is in charge. Haley, Chisholm & Morris, of Charlottesville, Va., with R. E. Parker in charge, holds the subcontract for the tunnel.

872 Cities Own Utilities

Eight hundred and seventy-two municipalities of over 2,500 population own their light and power installations.

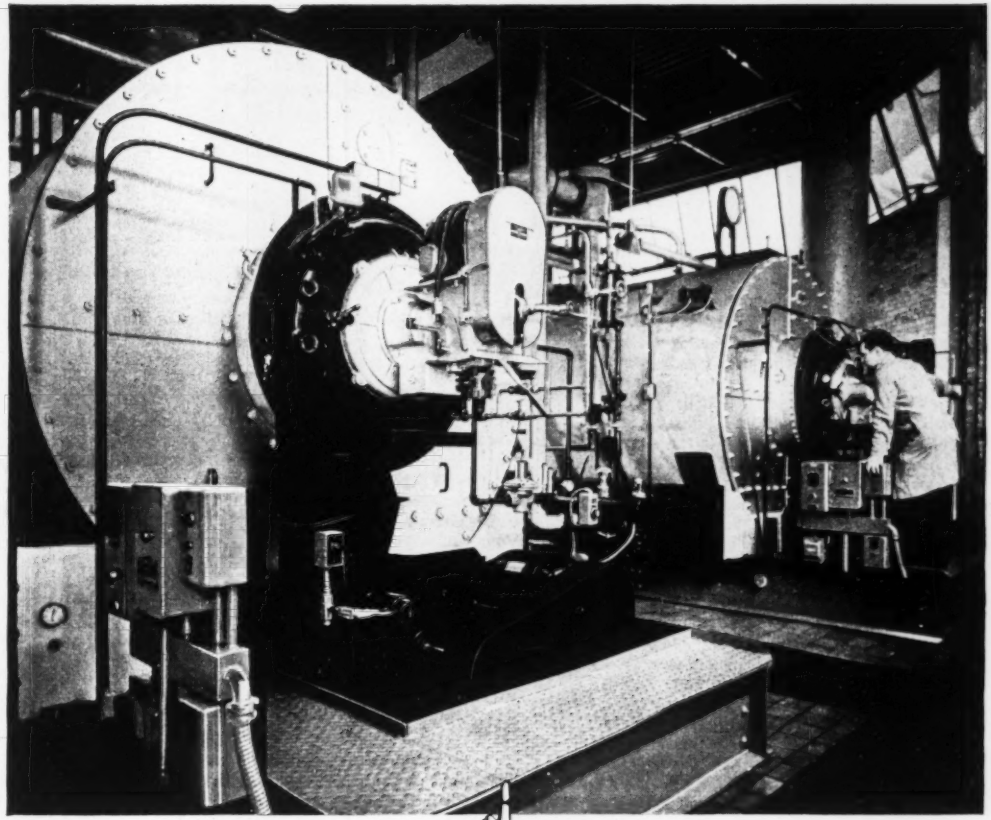
Citing a recent compilation of municipally-owned utilities by Federal Power Commission, the Municipal Finance Officers Association notes that 59 communities in Tennessee own their light and power source.

Ohio is the runner-up among states in the number of municipalities owning utilities, with 49 communities owning their own. Texas has 46, Minnesota 41, Nebraska 38, Missouri 37, Georgia 34, and Illinois and North Carolina each 31.

Shopping Center Surveyed

In order to develop a standard reference work that developers and builders may use for reference, the Urban Land Institute of Washington, D. C., recently completed a survey of nineteen major shopping centers throughout the United States. The centers studied ranged in size from a center of six shops to a commercial community of 100 stores.

Most notable change in the evolution of shopping centers, according to the Institute study, is improvement of parking facilities and better location of stores. Greater attention is being paid also to the arrangement of pedestrian facilities within the center.



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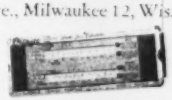

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How to Apply Stream-Pollution Standards

A proposal for evaluating economic as well as technical factors

How can a stream's capacity to receive wastes be allocated among several sources of pollution? Is it feasible to determine qualities of waste effluents by evaluating not only population and volume and strength of sewage but also (in the case of—several industries) assessed valuation, local taxes, number of employees and amount of payroll? Should other factors—such as value of products manufactured, which would give an economic picture of the value of an industry to its region and state as a whole be considered in allocation?

A possible procedure has been put forward for determining quality of industrial-waste discharges under pollution-abatement programs with established stream classifications and minimum effluent standards. Its sponsor is Charles C. Agar, newly appointed chief of the water pollution control section, N. Y. State Department of Health. Speaking before the N. Y. State Sewage Works Ass'n., in Kingston, June 6 and 7, Mr. Ager emphasized that this was his personal proposal and that it did not represent the fixed policy of any state agency.

"It is relatively simple," he said, "to determine what the character of effluent should be to maintain the applicable stream classification when only a single source of pollution is involved. The dilution factor and assimilating power of the stream can be easily applied to maintain the standard during both high and low flows."

With two or more sources of pollution, Mr. Agar pointed out that the problem of fixing a reasonable and equitable degree of treatment required for each effluent becomes considerably more complicated. To attack this problem, he suggested a two-step procedure: A stream survey and a calculation of effluent quality based on economic and technical considerations.

The stream survey would provide a means by which the "zone of influence" for all polluting materials could be determined. The zone of influence Mr. Agar defined as "The distance or length of stream beyond which uses to be made of a stream are not affected by any particular contaminant."

In the course of the stream survey, he continued, it should be possible to determine what the character of various effluents within the zone of influence should be with the condition of the stream and its uses as paramount considerations.

After the basic data have been assembled and analyzed, Mr. Agar suggested a hypothetical example where the quality of effluent from a particular plant might be determined as follows:

(1) Assume that 70 percent of stream capacity is available for dilution and disposal of sewage and industrial wastes, the remainder—30 percent—being reserved as a safety factor and expansion cushion for ten years.

(2) Allot the 70 percent among various sources of pollution "so that each will be entitled to a fair and reasonable portion of stream capacity which they can consider for use in disposing of their plant effluent without contravening the standard set by the stream classification."

An example of how a stream's capacity to receive wastes might be apportioned among several industries by weighting economic as well as technical factors is given in the accompanying tabulation. For simplicity, volume of flow is the numerical indicator of absorptive or assimilating capacity of the stream. Oxygen resources and reaeration capacity or the potential power of biological stabilization or assimilation could also be used, Mr. Agar said.

"Time of flow to a point of highest classification could also be a consideration in the analysis," he added.

It should be noted that arbitrary weights have been assigned to total volume of wastes, number of employees, plant valuation and amount of phenol discharged. Mr. Agar pointed out that one of the important problems to be solved in applying his method will be to determine what weight should be assigned to various factors in the evaluation.

"Maximum permissible phenol concentration for a public water supply," Mr. Agar stated, was considered in the example as 5.0 parts per billion.

If the allocation of waste discharges shown in the illustrative example should be adopted, industries A and B would be required to build treatment plants, he said. Industry C, on the other hand, would need no disposal facilities because actual discharge is less than that permitted.

Discussion wanted

In presenting this method of allocating a stream's capacity to receive wastes, Mr. Agar admitted that it brought up many questions that must be answered before it could be applied. He expressed the hope that sanitary engineers as well as industrial representatives would come forward with constructive criticisms and suggestions for its improvement for making its application practical.

ANALYSIS OF STREAM-CAPACITY ALLOCATION—AN ILLUSTRATIVE EXAMPLE

Phenol Wastes

Three Industries within zone of influence

Industry	A	B	C	Total
Total waste flow	0.1 mgd.	1.5 mgd.	20 mgd.	21.6
Employees on payroll	250	200	1,200	1,650
Assessed Valuation (taxes)	$1,000,000	$2,500,000	$11,500,000	$15,000,000
Phenol Discharged per day	200 lb.	300 lb.	120 lb.	620 lb.

1. Allocation on Individual Basis

Based on			
Volume	0.5%	7.0%	92.5%
Employees	15.2	12.1	72.7
Valuation	6.6	16.7	76.7
Phenol	24.4	61.0	14.6

Assumed Relative Weights

Volume	20%	Valuation	30%
Employees	30%	Phenol	20%

2. Allocation on Relative Weights

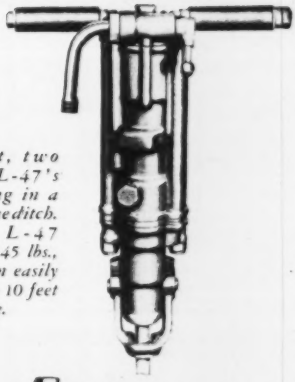
Volume	0.1%	1.4%	18.5%
Employees	4.5	3.6	21.8
Valuation	2.0	5.0	23.0
Phenol	4.9	12.2	2.9
Allocation	11.5%	22.2%	66.2%

3. Allocation Applied to Stream

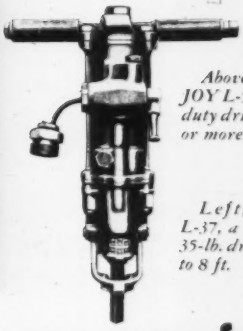
Stream Flow (minimum winter)	10,100 cfs.
Flow assigned for allocation (70%)	7,300 cfs.
Permissible phenol concentration (assumed)	5.0 p.p. billion
Maximum phenol per day	200 lb.

4. Allocated Phenol Discharge per Day

Industry	A	B	C
Weight	23.0 lb.	44.4 lb.	132.4 lb.
Concentration	28.0 ppm.	5.3 ppm.	0.8 ppm.
Volume	0.1 mgd.	1.5 mgd.	20.0 mgd.



Left, two JOY L-47's working in a pipe-line ditch. The L-47 weighs 45 lbs., and can easily drill to 10 feet or more.



Above, the 55-lb. JOY L-57, for heavy-duty drilling to 15 ft. or more.

Left, the JOY L-37, a hard-hitting 35-lb. drill for depths to 8 ft.

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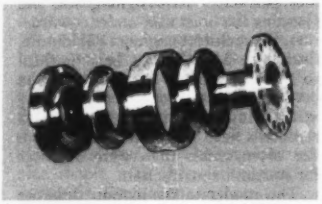

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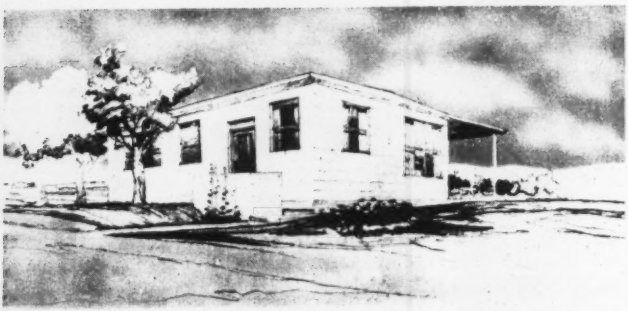


1. TWO-BEDROOM duplex dwelling cost $8.82 psf.

2. THE SAME HOME, with gable roof, cost $8.73 psf.

3. LARGER TWO-BEDROOM home with concrete-block exterior walls cost $9.00 psf.

4. SIMILAR HOUSE, with wood-frame walls, cost $10.10 psf.

A COROLLARY to the careful planning of streets, traffic flow, utilities, and services that is now going into the planned expansion of the City of Oak Ridge, Tenn., is the planning of the houses.

Designed with the objectives of pleasing appearance, low cost, and diversity of exteriors, as a part of the orderly development of the atomic city (ENR, July 14, 1949, p. 44). 1,582 single, duplex and multi-family housing units are now under construction.

The present long-range construction and rehabilitation program, expected to last over a period of five years, is a part of the general plan of the Atomic Energy Commission to make the town suitable for its function of housing employees of the huge atomic energy plant and laboratories at Oak Ridge.

Because of difficult topography and a desire for open design, net densities in the permanent single-family housing areas now average about three family units per acre. Residential sections containing permanent-type four-family and larger multi-family units have net densities of about ten families per acre. In designing and site planning the units now under construction, the architect-engineer (Skidmore, Owings & Merrill) has been faithful to the architectural expression of the town's original permanent housing area. However, some betterment in standards have been obtained through use of materials than were available for wartime construction.

The moderate population densities — the highest of which will be about 9.5 dwelling units per acre—were obtained without financial sacrifice by intensive site planning studies in which the intimate economic and technical relationships of buildings, roads, utilities and services were recognized and provided for in an integrated design. The open appearance of the housing pattern is a result of careful orientation of each building, both with respect to the other buildings and to the interior land area.

In the hilly terrain of new neighborhoods, roads were located along the tops of ridges where possible so that building sites could be provided on both sides of the road. Cul-de-sacs were introduced when it was not possible to reach ridge elevations with

road loops and, with ground slopes up to 25 percent grade at some building sites, houses were placed parallel to contours to minimize the foundation work.

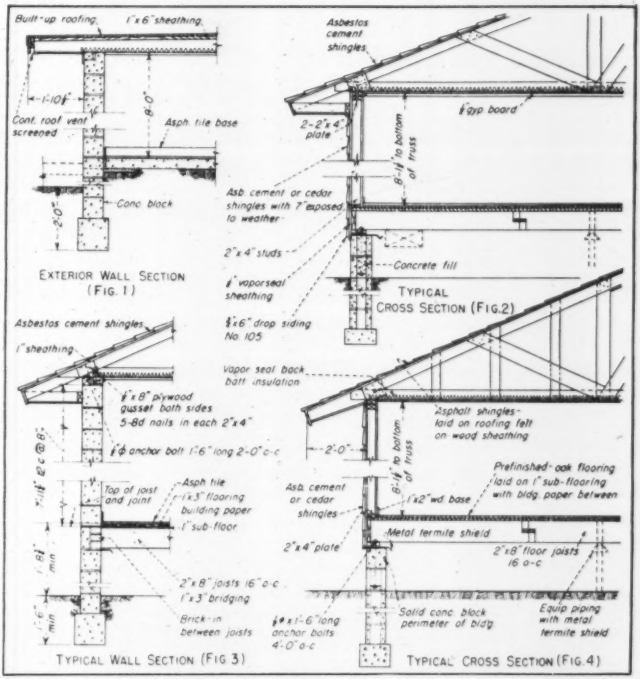
Of the 1,528 dwelling units now under construction, there are 645 single-family houses, all of one-story type. Six basic house models—with two bedrooms, three bedrooms and four bedrooms—were designed to achieve some degree of individuality. Some relief in outward appearance and variation in floor layout and floor area were secured by designing two two-bedroom models and three different three-bedroom models. (These design variations also permitted building costs to vary commensurate with a predetermined rental scale.) Alternate porch plans for some models and provisions for reversing floor plans on each model also help to reduce similarity in appearance.

The first four of the six single-family designs were prepared for a contract covering construction of 500 units. These houses were designed for a 35-year life expectancy, with economy of original cost and low maintenance rate as basic requirements. Studies showed that masonry construction, with aluminum windows and minimum exterior and interior trim, offered these possibilities.

To stimulate competitive bidding and obtain minimum costs, designs were made adaptable to four alternate types of construction. Bids were asked on cast-in-place lightweight concrete, lightweight concrete block, precast tilt-up lightweight concrete panels and light steel frame with covering of metal lath and gunite. However, this procedure imposes severe limits on the design, since it was necessary to introduce a center bearing wall on each model and employ relatively uniform plan shapes with only slight variation in outside dimensions.

This group of 500 houses is being constructed with concrete block foundations and walls. The concrete floor on grade contains radiant-heating coils and has an asphalt-tile finish. Roof framing consists of slightly pitched wood joists. Above are wood sheathing and built-up 20-yr. bonded roofing of asphalt and slag. Among the special features incorporated are aluminum double-hung windows and floor-to-ceiling, wood, sliding closet doors.

The direct contract cost of these units, not including site development and outside utilities, ranged from $9,045 for a two-bedroom unit to $10,870 for the three-bedroom model. On a cost per square foot basis, the price ranged from $10.23 for one model of the three-bedroom unit to $11.45 for the typical two-bedroom unit.


Built-up roofing
1"x6" sheathing
Asbestos cement shingles
1'-10"
8'-0"
Cont. roof vent screened
Asph. tile base
2-2"x4" plate
1/2" gyp. board
8'-1" to bottom of truss
Asb. cement or cedar shingles with 7" exposed to weather
Conc. block
2'-0"
2"x4" studs
Concrete fill
EXTERIOR WALL SECTION (FIG. 1)
1/2" vaporseal sheathing
TYPICAL CROSS SECTION (FIG. 2)
Asbestos cement shingles
1" sheathing
1/2"x6" drop siding No. 105
Vapor seal back batt insulation
1"x8" plywood gusset both sides 5-8d nails in each 2"x4"
Asphalt shingles laid on roofing felt on wood sheathing
1/2" anchor bolt 1'-6" long 2'-0" o-c
2'-0"
8'-1" to bottom of truss
Prefinished oak flooring laid on 1" sub-flooring with bldg. paper between
Top of joist and joint
Asph. tile
1"x3" flooring
building paper
1" sub-floor
Asb. cement or cedar shingles
1"x2" wd. base
Metal termite shield
2"x4" plate
2"x8" floor joists 16" o-c
2"x8" joists 16" o-c
1"x3" bridging
Brick-in between joists
1/2"x1'-6" long anchor bolts 4'-0" o-c
Solid conc. block perimeter of bldg.
Equip. piping with metal termite shield
TYPICAL WALL SECTION (FIG. 3)
TYPICAL CROSS SECTION (FIG. 4)

DETAILS of exterior walls and cross-sections are shown above. Drawing number corresponds to house number on opposite page.

Two additional single-family models were designed for a housing contract involving construction of 343 units.

By reducing the life expectancy of buildings from 35 to 20 years and application of minimum FHA standards in design, approximately the same floor area was secured at reduced cost.

One of these models, a three-bedroom unit with 904 sq. ft. of floor area, cost $8,402 or $9.29 per sq. ft. A four-bedroom type cost $9,569 or $8.92 per sq. ft. Although these figures indicate substantial reductions in the square foot costs from the first four models, part was due to general dropping of construction costs.

The inherent economies in duplex-unit design favored its application in Oak Ridge. A total of 484 duplex housing units, in 242 two-family buildings, are now under construction.

Two models were designed for a contract involving construction of 343 units of which 198 units were of the duplex type. One model is a two-bedroom unit with 696 sq. ft. of floor area. It has concrete-block foundations, wood-frame walls, hipped roof, asbestos or cedar-shingle siding, wood floors and double-hung aluminum windows. This model cost (building proper, not including cost of site development or outside utilities) $7,033 or $10.10 per sq. ft. The second model, which has concrete-block exterior walls instead of wood-frame, cost $8,062, or $9 per sq. ft., also not including cost of site development or outside utilities.

Two additional duplex models with two bedrooms each were designed for a contract covering 286 dwelling units (143 buildings). Here it was necessary to further scale down costs to meet the rental levels that could be paid by the negro population to be housed in these units. Floor areas were therefore reduced from 696 to 576 sq. ft., the utility alcove was eliminated, kitchen and window area reduced, and one entrance provided.

Both these models have concrete-block foundations, wood-frame walls and asphalt-shingle roof, asbestos-cement or cedar-shingle siding, wood joists, wood subfloor and hardwood floor. One model, constructed with a hipped roof, cost $5,079 per dwelling unit for the building proper—or $8.82 per sq. ft. The second, with a gable roof and the same floor plan, cost $5,027, or $8.73 per square foot.

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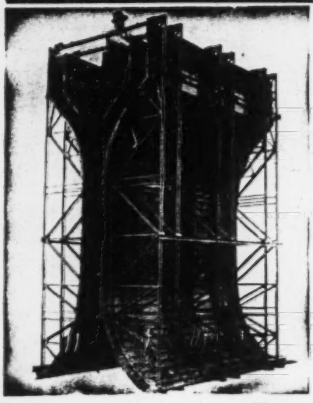

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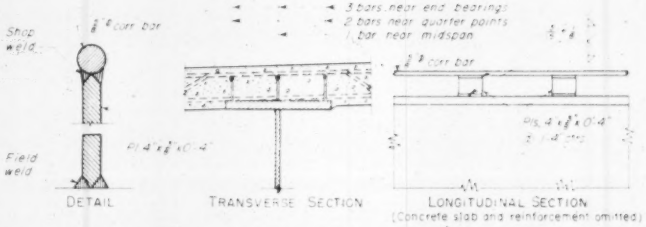
To eliminate the tell-tale finger marks of mechanics on the shiny surface of new copper roofs, flashings and downspouts, as well as the stains produced by soldering operations, the entire copper installation may be dressed up with that much-desired patina or verde-antique tone.

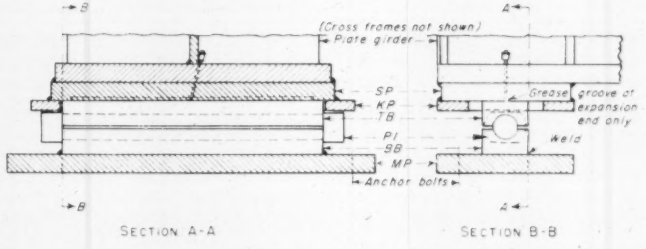
This may be done most effectively with a solution of 3 oz. crystallized chloride of iron, 1 lb. ammonium chloride, 8 oz. verdigris, 10 oz. common salt, 4 oz. potassium bitartrate in 1 gal. of water.

This solution should be applied with a brush. In brushing it on the surface the applicator should wear, for his safety, rubber gloves and eye protection.

For best results let the first application be exposed to the air for one day to note the extent of coloration. Subsequent applications may follow to suit the individual taste. Once uniformly applied, weathering will bring the coating to an over-all even tone.—PAUL C. ZIEMKE, 101 KIMBALL LANE, OAK RIDGE, TENN.



SHEAR TRANSMITTER proposed for composite girder bridges, based on studies of alternative details to comply with specifications of the American Association of State Highway Officials and the American Welding Society. Advantages claimed are simplicity, efficiency and economy.—R. L. Larson, Bridge Dept., State Division of Highways, Sacramento, Calif.



SP - Sole plate welded to girder flange in shop
KP - Keeper plate welded to sole plate in field (expansion end)
TB - Top bearing bar of phosphor bronze or copper alloy
PI - Pin with solid heads
BB - Bottom bearing bar welded to MP
MP - Masonry plate (anchor bolts not shown)
Note: All parts to be of structural steel except the top bearing bar
Keeper plate for fixed end to have snug fit on bearing bar

END BEARING proposed for welded plate girder bridges. Advantages claimed are: Not affected by accumulation of dirt; can provide for transverse as well as longitudinal movement; sliding bearing of lubricated structural steel on phosphor-bronze or copper alloy can function under considerably greater stress than steel on steel, which may seize and bind at less than 200-psi. pressure and only initial lubrication is important because of the slow reciprocating motion. Also, fabrication is simple, and pairs of bearing bars can be bored from solid or cored bars to be split or sawed apart.—R. L. Larson, Bridge Dept., State Division of Highways, Sacramento, Calif.

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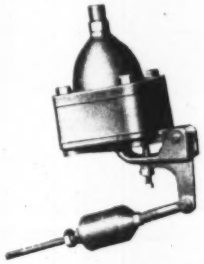

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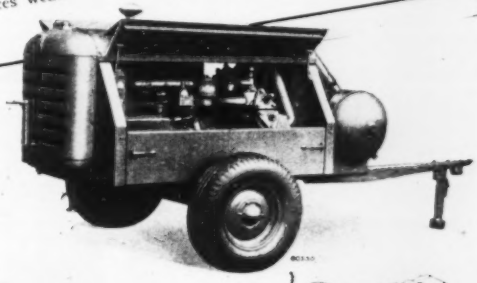

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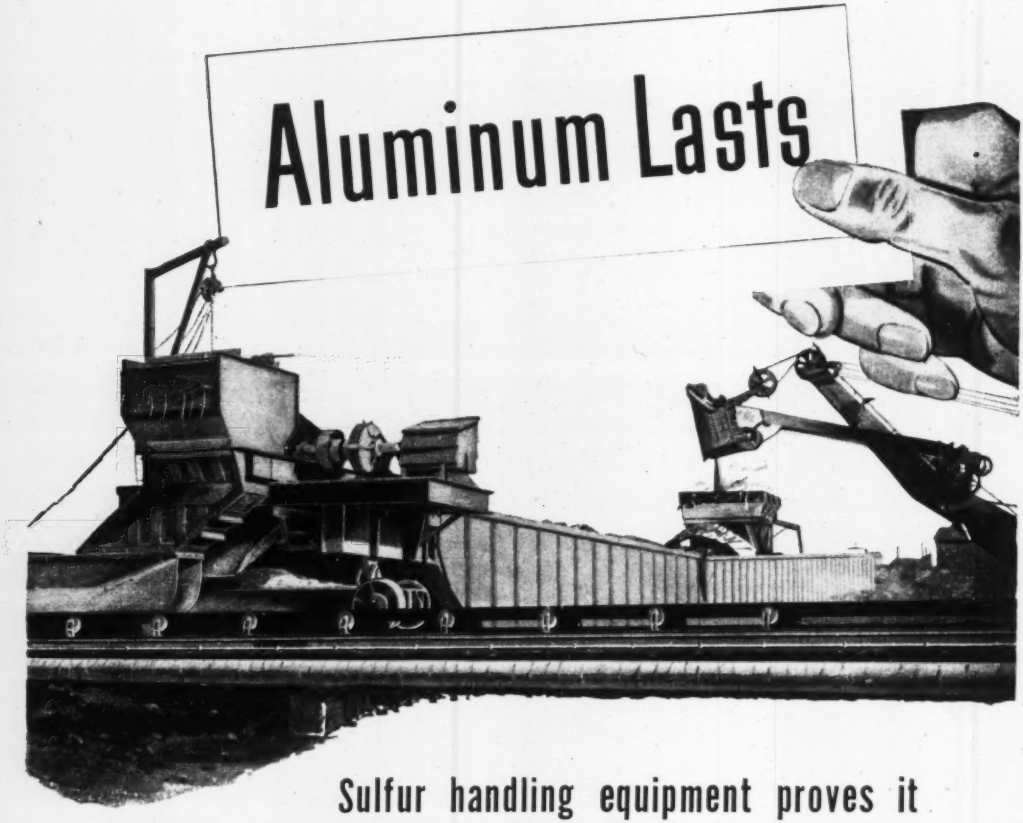

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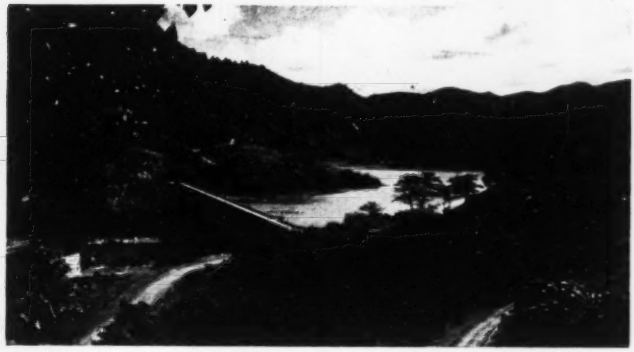

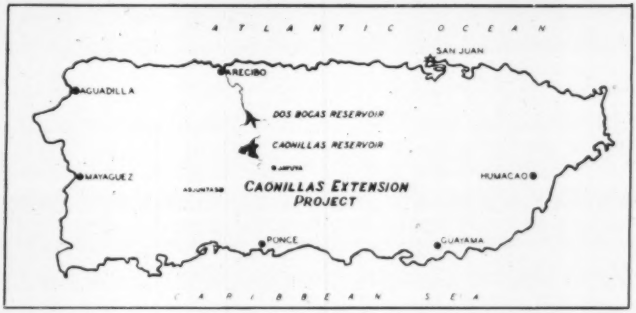

CAONILLAS DAM, second step in the four-pronged program looking toward development of Arecibo River Basin, was completed early this year at a cost of $10,000,000. The map shows the strategically central location of the Caonillas Dam and the other power projects in the Arecibo River basin. Puerto Rico Gov't photo.

Power for Puerto Rico

With the completion of Caonillas Extension hydro-electric project, now more than one-third finished, the Puerto Rico Water Resources Authority will have added to its list of achievements the remarkable feat of adding 121,000,000 kwh. to Puerto Rico's annual potential water-power in a little over a decade.

An important phase of the island's effort to realize speedily its total estimated water-power potential of 700,000,000 kwh., the Caonillas Extension hydro-electric project is one part of a 4-part program looking toward the development of the Arecibo River basin high in the mountains. Already completed phases of this program are Dos Bocas Dam which added 35,000,000 kwh. and Caonillas Hydro-electric project which accounted for 50,000,000 kwh.

The Caonillas Extension hydro-electric project now under construction will cost $4,000,000. Working on it is a year-around force of 900 men.

It will add 36,000,000 kwh. to the island's potential water-power. Scheduled for completion in two years, it involves the driving of 26,500 ft. of tunnels and the conveying of a total of 182,000 ton-miles of dirt and rock.

Under study is the Lower Dos Bocas project, the fourth and last economically-feasible power development in the Arecibo River basin. Its finish will mark the addition of another 19,000,000 kwh. and complete the development of a stretch in the Arecibo River comprising a total drop of 1,150 ft.

The Caonillas Extension project calls for the addition of 30.7 sq. mi. of drainage area to the Caonillas project.

This work will be accomplished by diverting the Upper Arecibo, Pellejas and Vivi rivers eastward into the Caonillas Reservoir where the flow will be re-regulated and directed through both the Caonillas and Dos Bocas power plants.

The proposed diversion of the Arecibo River will be accomplished by the construction of a dam which will divert the flow into a tunnel 8,300 ft. in length.

This tunnel will serve to carry the waters through the mountain divide between the Arecibo and Pellejas rivers drainage areas to a tributary of the Pellejas River, from which the flow will follow the stream bed about one mile to its confluence with the Pellejas, and thence 2,000 ft. down this stream discharging into the Pellejas Reservoir. From there the flow diverted from the Arecibo River added to that of the Pellejas River will be diverted through the mountain divide between the Pellejas and Vivi rivers to the Vivi river at a point about five miles upstream from the town of Utuado.

Thence, the entire flow, including that of the Vivi River, will be diverted via 4,500 ft. of tunnel and 150 ft. of reinforced concrete penstock to a power plant located on a tributary of the lower Vivi. The power plant will consist of an installation of 4,000 kw. in one reaction-type turbine utilizing a drop of 200 ft. available between these two points to produce annually an estimated average output of 9,000,000 kwh. of electric energy.

Transport

Israel—Early this month the first train to run from Tel Aviv to Jerusalem since the Arab-Israeli war began was placed on the schedule of the Haifa-Tel Aviv Railroad. At first, as a security measure, only freight will be carried when service is resumed on the railroad.

Before the end of this year it is expected that Israel will have completed a new coastal railroad between Haifa and Tel Aviv at a cost of $8,000,000. Of that amount $3,000,000 will be obtained from an American loan to be used in buying equipment.

A large part of the roadbed has already been built.

Highway work is also progressing. A new road is being built from Tel Aviv to Natonya, a coastal city. Other highways are being planned to connect the coastal region with Valley of Emek and Galilee.

Great expansion of both railroads and highways in Israel is necessary, government officials say, to develop industry and commerce by cheaper

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Brazil—Engineers of the Companhia do Vale do Rio Doce have decided to build a tunnel around the north side of a cut on the Vitoria-Minas Railway, where landslides have caused serious trouble.

The earth fall, which blocked traffic early this year, had been temporarily cleared, but engineers were convinced it would be wiser to abandon the cut than to continue risking repetitions. It was understood the tunnel would cost about $750,000. Contractors are the Raymond-Morrison Knudsen firms, which for several years has been rebuilding the railway.

Irrigation

India—Twenty thousand laborers now are engaged in excavation and construction of a coffer dam on the Bhavani River in Madras Presidency preliminary to the construction of a 5¼-mile long compacted earth dam which will cost about $9,600,000 and impound 28,000,000 cu. ft. of water. The dam will rise 160 ft. above deepest foundations and 133 feet above stream level, with provision for irrigation of 237,000 acres of farmland. Its earth contents will be 12.6 billion cu. ft., and a central 396 ft. of masonry spillway requires 50,000 metric tons of cement. Work has been underway 10 months, and completion is scheduled in 4 years.

Big Harbor

Africa—One of the biggest harbor contracts in the world has been awarded to Taylor Woodrow Construction, Ltd. It will extend and develop Takoradi Harbor, on the Gold Coast at a cost of about $11,000,000. The work will be done for the government and is expected to play an important part in the development of trade in West African colonies.

Contract calls for new timber wharves and extension of the main quay, with new sheds and warehouses, and new railway facilities, including a running shed and marshalling yard. Oil berth and bauxite loading conveyors are to be moved to new positions and about $1,000,000 will be spent on new electric cranes.

A total of 100,000 cu. yd. of concrete will be used in construction of quay walls and 1,700 tons of structural steel work will be used in buildings. Twelve miles of railroad track will be laid. First section of the new harbor will be ready next year. The whole job will be done in 1952.

Raymond

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MUNICIPAL AFFAIRS

Slum Clearance Committee

The United States Conference of Mayors has established a special slum clearance committee to advise with Housing Administrator Foley in carrying out the slum clearance phase of the recently-approved federal slum clearance and housing program.

The chairman of the committee is Mayor David L. Lawrence of Pittsburgh, Pa. The other members of the committee are Mayors Martin H. Kennelly, of Chicago; Elmer E. Robinson, of San Francisco; Thomas D'Allesandro, Jr., Baltimore; W. B. Hartsfield, Atlanta, Dennis J. Roberts, Providence; Joseph M. Darst, St. Louis; and Watkins Overton, Memphis; also J. Russell Young, chairman of the District of Columbia Board of commissioners; with John P. Robin, of the Pittsburgh Urban Development Authority, acting as secretary.

It is expected that the first meeting of the committee will take place in Washington very soon, and at that time extensive discussions will be held with Administrator Foley and his staff in connection with the drafting of the rules and regulations for administering the program.

Paul V. Betters, executive director of the conference says: "There are a number of the larger cities of the country that already have well-prepared plans and are ready to proceed promptly. These include New York, Chicago, Philadelphia, Pittsburgh, Detroit, San Francisco, Baltimore, St. Louis and Providence. Other cities are now conducting comprehensive surveys."

Traffic Specialists Needed

Rapid expansion of scientific traffic engineering is the solution to America's growing problem of traffic congestion in cities, according to Theodore M. Matson, director of the Yale University Bureau of Highway Traffic, and research associate in transportation.

The Yale traffic expert cited two types of possible traffic improvements: Restrictive—those which reduce hazards and improve movement by imposing road rules and control devices on motorists; and constructive—the creation of facilities which are built to meet traffic demands. Each method requires the application of engineering, enforcement and educational techniques.

As to parking, Mr. Matson predicted that multi-deck parking garages will have to be provided in downtown areas. "I am thoroughly convinced that it will become necessary to create such parking facilities if central business districts are to be in a competitive position to serve the buying public," he said.

Cleveland's Harbor

The proposed comprehensive $48,787,500 river and harbor improvement program at Cleveland, Ohio, includes $21,887,500 in projects which have been approved and most of which are now in the blue-print stage, according to a recent report of the Cleveland Chamber of Commerce.

The work includes improvements in the present navigable channel of the Buyahoga River. A proposed extension of that channel would include a huge setting basin above the proposed new head of the channel. The total cost of the project is estimated at $26,900,000.

Municipal Briefs

Despite action by the Washington state legislature earlier this year creating a fish sanctuary on the Cowlit River, the city of Tacoma has applied to the Federal Power Commission for permission to build two dams on the river. J. Frank Ward, City Light superintendent, said the city is asking federal approval of the projects on the basis that the state has no jurisdiction over use of the river. Adequate protection of fish life will be provided in the plans, he said.

From time to time, the fishing industry interests have opposed construction of dams which it was thought might interfer with their operations. Even the Indians have objected at times.

The city council of Indianapolis,

STREAMLINING 42D STREET—This summer New York City is carrying out extensive improvements on one of its principal and best known thoroughfares—42d Street—which crosses Manhattan from the East River to the North River. Pictured above is a big clamshell crane tearing up the old pavement and the now disused street car tracks in front of the Grand Central Terminal. An unusual number of "sidewalk superintendents" is on hand. Originally it was planned to install radiant heating pipes at the chief crossings on the street to remove snow quickly, but it was found that this would be too expensive, so the plan was abandoned.—Wide World Photo.

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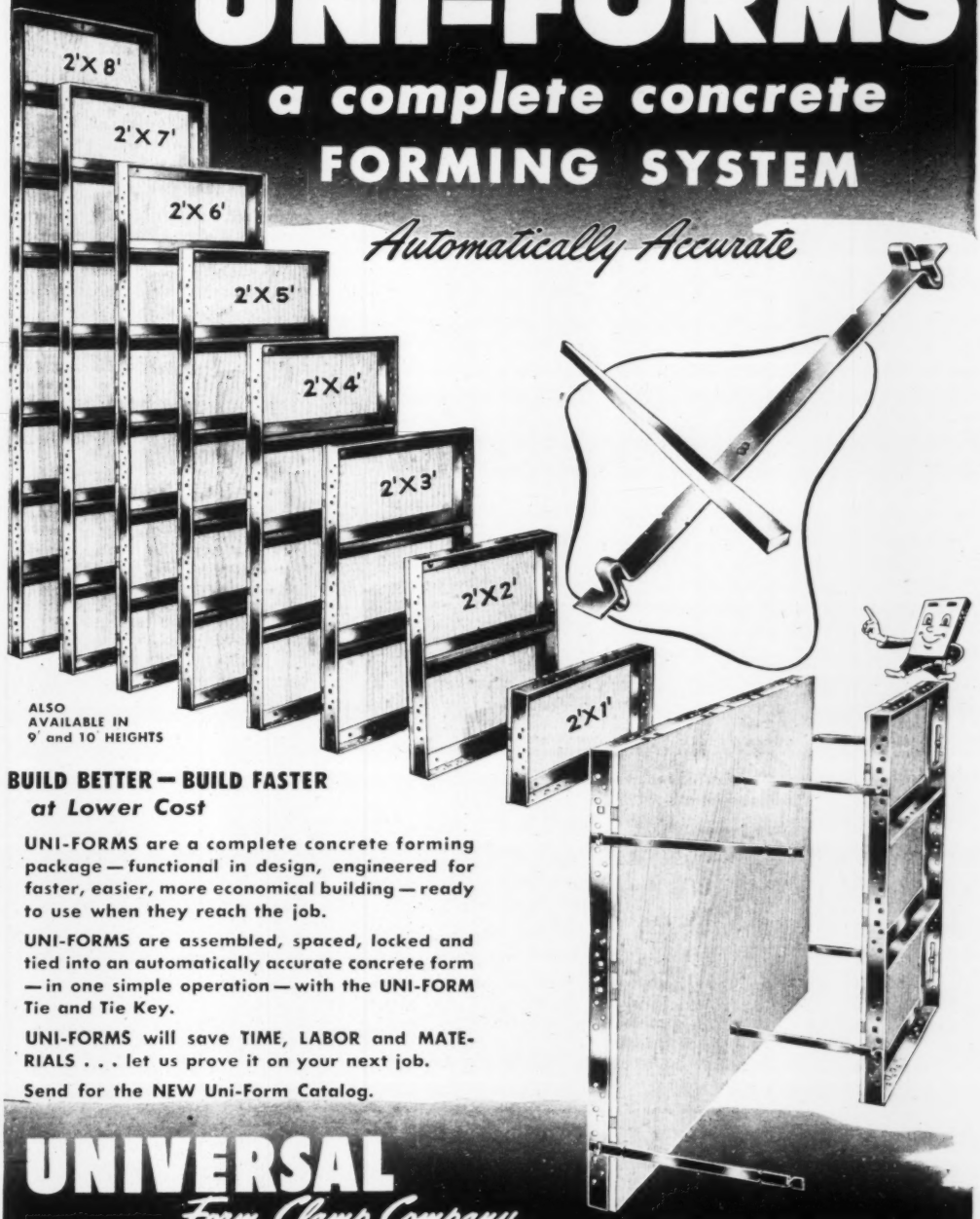

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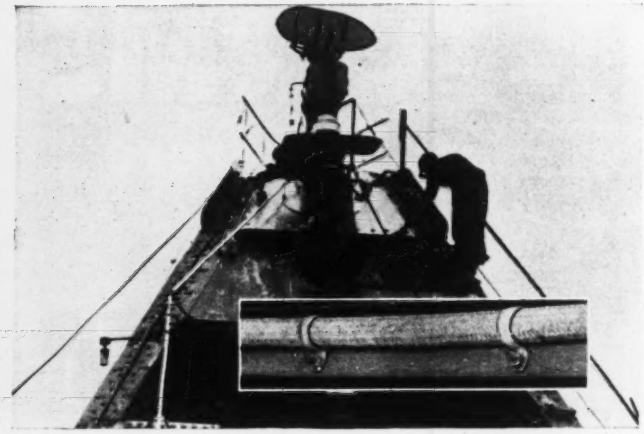

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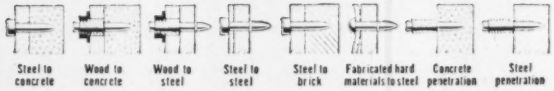

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Please show us how we can apply RAMSET SYSTEM to our fastening work to cut costs and save time.

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EN

Ind., has approved installation of parking meters for a 9-month "trial run." A total of 525 meters will be installed in the downtown area. Indianapolis is one of the few cities in the state without the meters at present.

The Traffic and Transportation Commission of Columbus, Ohio, has suggested a parking program for 3,350 cars, including a double-deck facility for 750 cars, a double-deck subterranean garage for 960 cars, a double-deck facility for 1,000 cars, and a triple-deck building for 200 cars, combined with space for market stands, as well as two open lots each with 220 "short time" spaces, all in the downtown district. Initial outlay for the program would be $3,000,000.

At $4,700,000 post office at Billings tops the list of federal building projects proposed for Montana. It would house most of the federal agencies in the city, including offices of the Bureau of Reclamation and the Indian service.

Creation of a capital improvement fund for financing on a pay-as-you-go basis all or part of the cost of improvements, additions or replacements to the Buffalo, N. Y., sewerage system has been approved by local sewer authority.

Both Indianapolis and Muncie, Ind., have taken preliminary steps to make use of a new public housing law. In Indianapolis, city council is considering creation of a housing authority as the first step in obtaining new housing. In Muncie, city officials are pushing plans for new housing to cost at least $1,200,000, to include additions to two existing projects and construction of two new projects, applications for which have been on file since 1945.

Middletown, Ohio, city commissioners have voted to increase water rates beginning Sept. 1, to finance $1,500,000 of improvements. Water will cost $1 more for the first 1,000 cu. ft. per quarter.

The Toledo, Ohio, City Plan Commission has recommended that downtown businessmen be given an opportunity to provide at least 1,000 additional off-street parking space by Jan. 1, 1951, and if they do not obtain this by that time, the commission recommended "the city should then take steps to meet parking requirements." The Ohio legislature recently enacted a bill enabling cities to acquire sites for lease, sale, or public operation of off-street lots.

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Speed! With a top speed at sea level of 184 miles per hour (performance figures guaranteed), at 8,000 feet the Beechcraft Bonanza cruises at 170 mph using only 56% of engine's maximum rated take-off power. *No engine overload*, so you get extra speed with an extra margin of safety.

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Comfort! The unique retractable step preserves feminine dignity. The wide sedan-type door and folding front seat help make getting in and out of this Beechcraft as easy as the family car. Plenty of room to stretch out; cabin really sound-proofed.

These are only a few of the reasons why the Beechcraft Bonanza is a better buy! *See* it today! A note on your company letterhead will bring illustrated brochures describing the Beechcraft Bonanza's many *extra* advantages. Write to Beech Aircraft Corporation, Wichita, Kansas, U. S. A.

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Top speed, 184 mph	Exclusive retractable step
Cruising speed, 170 mph	Limousine entrance
Range, 750 miles	Insulated, sound-proofed cabin
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BONANZA
MODEL A35

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MEN AND JOBS

E. Brooke Lee, vice-chairman of the Maryland-National Capital Park and Planning Commission, has been appointed to a four-year term in the State Planning Commission.

Arthur James Hughes, engineer in the third district of the sixth division of the North Carolina State Highway & Public Works Commission at Asheboro, N. C., has been named assistant engineer of the 6th division to succeed **T. G. Poindexter** who has been named division engineer.

William F. Uhl, for the last decade president of Chas. T. Main, Inc., Boston consultants, recently received the honorary degree of Doctor of Engineering from Tufts College for his services to the country in hydraulic engineering. Dr. Uhl joined the Main organization in 1909, and in his career has been identified with the design and construction of over 480,000 hp in hydroelectric plants. He has been a member of the TVA consulting board and special consultant to the U. S. Army Engineers on flood control.

Frank M. Clinton has moved up from assistant regional planning engineer to assistant regional director for the Bureau of Reclamation in Region I—the Pacific Northwest—with offices at Boise, Idaho. He succeeds **H. T. Nelson**, who became regional director on July 1, replacing **R. J. Newell**, retired from government service. A civil engineering graduate of the University of Arizona, Mr. Clinton has worked for the Bureau of Reclamation since 1937. In recent years he conducted the engineering and economic study of the Snake River water problem—in connection with the proposed construction of Palisades Dam in Southeastern Idaho—and the negotiations with canal companies on use of reserved space in American Falls reservoir.

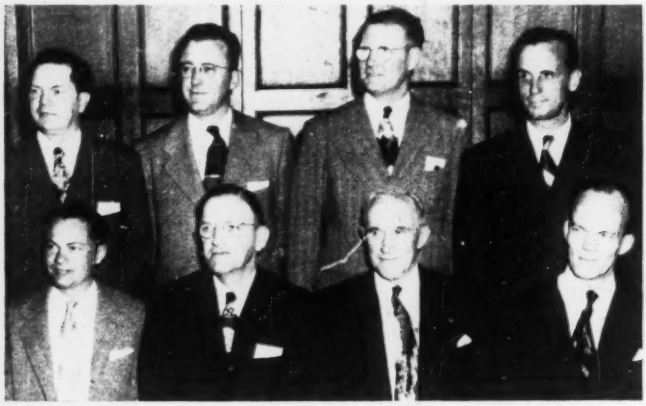
Martin E. Kelley of Missoula, has been named supervising engineer for the Montana state board of examiners and will supervise all structures being built by the state in an extensive building program now under way. He is a graduate of Montana State College at Bozeman, and formerly was associated with the defense plant engineering division of the federal Reconstruction Finance Corporation in Washington, D. C. Previously he was state engineer-inspector for the Public Works Administration for Montana and Idaho.

Thomas D. Rose, of Chapel Hill, N. C., has been named city manager of Chapel Hill to succeed **Gilbert W. Ray**, who resigned to become city manager of Fayetteville, N. C. He obtained his civil engineering degree from the University of North Carolina in 1910 and for the last two years has served as consulting engineer for Chapel Hill.

Capt. Kendal B. Bragg, civil engineer of the 12th Naval District, San Francisco, has retired after 32 years of continuous service with the Navy. He will be relieved by **Capt. Harold W. Johnson**, civil engineering officer of the Puget Sound Navy Yard, Bremerton. Captain Bragg received a civil engineering degree from the University of Wisconsin in 1915. He was commissioned lieutenant (jg) in 1917 and served at various stations until 1940 when he became a member of the Greenslade Board to select the eight bases obtained from Great Britain in exchange for 50 U. S. destroyers. In 1941, he was in charge of construction of four bases in Great Britain, and in 1942 he was transferred to the staff of the Commander, South Pacific Area.

E. W. Gradt, O. J. Knechtges, Leo F. Pratt and **Edward C. Youngman** have been admitted as partners of the firm of Mead & Hunt, consulting engineers of Madison, Wis.

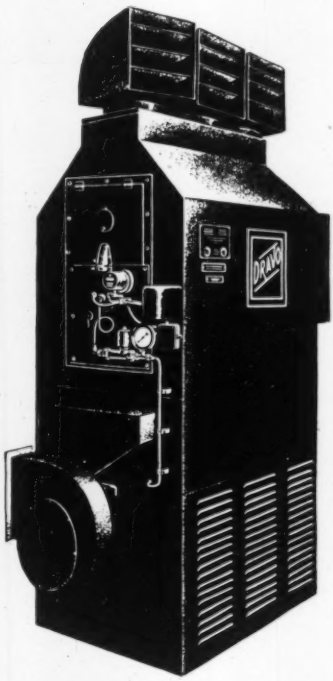
Norman Marr has been promoted to controller and chief engineer of the Dominion Water and Power Bureau, Department of Mines and Resources, Ottawa, Ont. He has been acting controller and chief engineer since the retirement of **Victor Meek** last December.



At the conclusion of a meeting held in Spokane, Wash., recently to form the Pacific Northwest Conference of the American Society of Civil Engineers, the new board of directors posed for this picture. They are top row, left to right, L. V. Downs, Spokane; Guy Taylor, Oregon; Arthur Johnson, Tacoma; G. K. Ebersole, Montana. (Bottom row) T. H. Campbell, Seattle; J. L. Stackhouse, Tacoma; W. L. Malony, National ASCE director from District 12; F. D. Langdale, Tacoma. Stackhouse is chairman of the board, Campbell, vice-chairman and Langdale, secretary.

Georgia's biggest bridge job, at Brunswick, has the expert supervision of these State Highway Department men: E. W. Ellis and W. C. Smith, respectively, special bridge engineer and resident engineer. Piers for the 4,600-ft. main bridge across Turtle River are going in. Also, floating dredges are mucking out marsh and filling the channels with sand for several miles of approach highway. Covering the job calls for quite a bit of chasing around in speed boats.

employee heating comfort is measured "by the FOOT."



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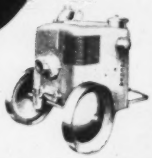

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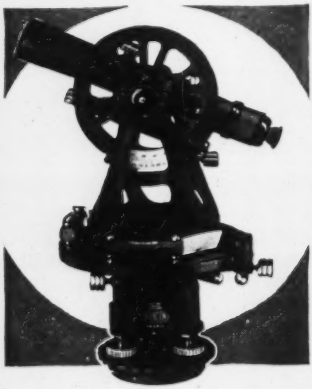

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Photographed on Brooklyn Bridge are D. B. Steinman, right, consulting engineer in charge of extensive changes and repairs now being made on the bridge, and Theodore Belzner bridge inspector in charge of the bridge. Mr. Steinman is author of the book "Builders of the Bridge," which is a biography of John A. Roebling and his son Washington A. Roebling, and a description of the famous bridge they built.

Supt. D. B. Bithe of D. W. Winkelman and Co., pointing out to City Engineer Frank H. Cothran of Rocky Mount, N. C., the advantages of the bulk cement spreader on soil-cement street. Last year the Winkelman firm placed over 90,000 sq. yd. of soil-cement in Rocky Mount and the project will call for 35,000 sq. yd. more.

On hand to take an "inside" look when the New York City department of Water, Gas and Electricity dewatered the Catskill Aqueduct for inspection was J. A. Frank, vice-president and general manager, National Water Main Cleaning Co., New York, N. Y.

Elections and Activities

Canton, Ohio, chapter of Ohio Society of Professional Engineers has elected E. C. Coldren, president; Everett P. Hamilton, first vice-president; Wilbur Sponseller, second vice-president; and Karl Snyder, Chester Muckley, and Harrison Sherer, trustees. Douglas T. McGreth was elected secretary-treasurer.

Ft. Worth, Tex., Branch of A. S. C. E. has chosen the following officers: John J. Burgess, president; C. V. Thornton, vice-president; and J. K. Alewine, secty-treas.

Walter Luney, head of Luney Bros. & Hamilton Ltd., has been elected president of the Victoria, B. C., Building Industries Exchange. He succeeds George H. Wheaton, who has served for the last two years. J. A. Pollard was appointed vice-president, and elected as directors were P. D. Bowe, W. B. Dillabough, L. G. Scott, O. E. Day, S. J. Ross, Gordon McClure, G. Verley, Gilbert Brown, H. J. Langdon, Frank Clarkson, W. L. Menzies and D. E. Smith.

MAJOR MEETINGS

Association of Western Engineers, Patterson Hotel, Bismarck, N. D., Aug. 22-25.

Canadian Good Roads Association, Chateau Lake Louise, Alta., Sept. 12-14.

New England Water Works Association, The Balsams, Dixville Notch, N. H., Sept. 13-16.

Public Works Congress and Equipment Show, Municipal Auditorium, Kansas City, Kan., Sept. 18-21.

Institute of Traffic Engineers, Wardman Park Hotel, Washington, D. C., Sept. 25-28.

Interstate Commission on the Potomac River Basin, Capon Springs Hotel, Capon Springs, W. Va., Sept. 29-Oct. 1.

American Society of Planning Officials, Statler Hotel, Cleveland, Ohio, Oct. 10-12.

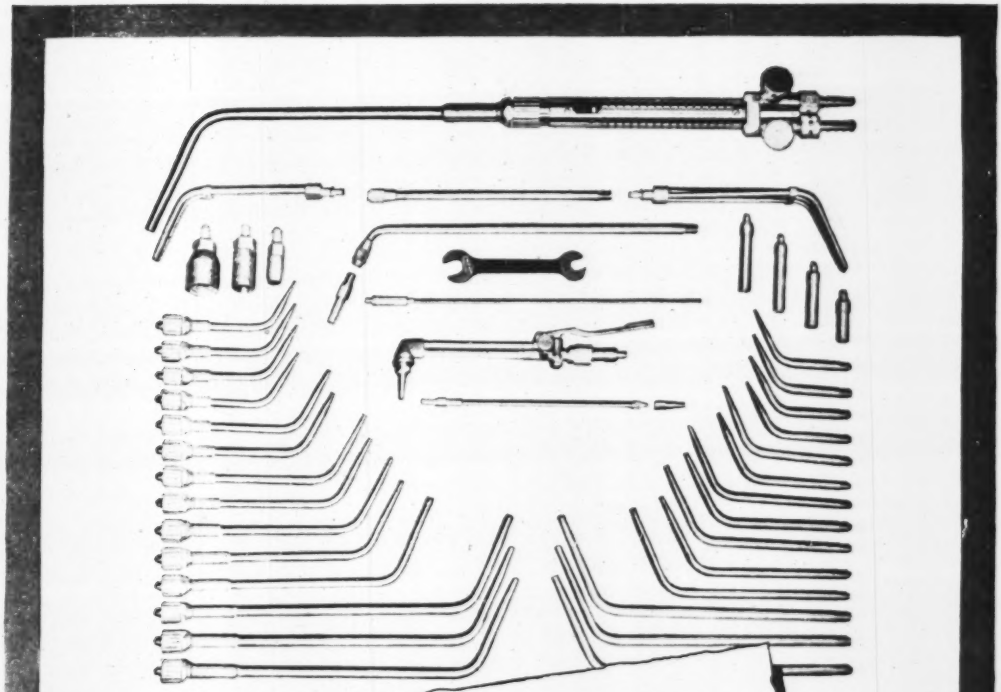
American Society for Testing Materials, Fairmont Hotel, San Francisco, Calif., Oct. 10-14.

American Association of State Highway Officials, Gunter Hotel, San Antonio, Tex., Oct. 10-14.

Federation of Sewage Works Associations, Hotel Statler, Boston, Mass. Oct. 17-20.

National Conference on Industrial Hydraulics, Sheraton Hotel, Chicago, Ill., Oct. 26-27.

Engineers Council for Professional Development, Edgewater Beach Hotel, Chicago, Ill., Oct. 28-29.



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The torch head is of durable, long-wearing monel metal; thus fewer torch head replacements, and lower maintenance costs result. The general design of the new Airco 800, plus flexible 1/4" or 5/16" I.D. hose, assures perfect balance and ease of manipulation . . . lowered operator fatigue.

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Notes on Legal Decisions

Summaries of decisions relating to construction prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phrases of Construction Contracts (McGraw-Hill)

Payment for Extra Work Under Unit-Price Contracts

"Where the extra work and materials furnished are of the same character as the work and materials named in the contract, the general rule is that they are to be paid for according to the schedule of prices fixed by the contract. Where, however, the work or change is such that it is impossible to trace the contract and say to what part of the work it is to be applied, as where the extra work and materials are of a different character from those specified in the contract, and no price is agreed on for extra work, the rates named in the contract will not apply and the party performing will be entitled to recover what they are reasonably worth; and in determining such value a reasonable profit is to be added to the actual and reasonable cost. The parties may, of course, expressly contract with regard to the amount of compensation for extra work and will be bound thereby, and the original contract may fix the compensation to be paid for extra work; but where the contract specifies a certain price for particular extra work it does not apply to extra work of a different character".[1]

The following cases illustrate the practical application of this principle of law.

Bids were asked for making the necessary excavation for the abutments of a bridge. The specifications contained the following notation: "The above quantities are approximate only, but are considered sufficiently accurate for the purpose of basing a proposal." Bidders were instructed to take the necessary steps to verify the correctness of the estimated quantities of work to be done.

The contractor agreed to make the necessary excavation at a specified rate per cubic yard. The contract contained a clause to the effect that "all necessary extra work or additional material not specified in the bill of quantities * * * shall be agreed upon and the price therefor estimated" by the superintendent and the contractor.

Where the work was actually performed, the amount of excavation required was considerably more than the amount upon which the bid was based. The contractor brought the action to recover for the excess excavation on the theory that it was extra work and that he was entitled to compensation therefor at the rate and in the manner provided for by the clause in the contract relating to extra work. The court limited the contractor's recovery to the unit price bid for the work, and said that a reasonable construction of the contract "requires the holding that all work of a general character provided for in the specifications, even though the amount of it may have been considerably in excess of the estimated quantities, comes within the work to be done at the contract prices".[2]

In another case, bids were asked for the furnishing and erection of certain structural steel at a unit price per 100 lb. The bridge had a span of 193 ft. and a weight of about 190 tons. After the contract was entered into, the plans for the bridge were changed so that when it was finally erected it had a span of 243 ft. and a weight of 290 tons.

The contractor supplied the material and completed the enlarged structure without objection or protest. The contract provided that one-half of the contract price would be paid when the steel was delivered on the job and the contractor sent in bills on this basis and received payment therefor.

After the work was completed, the contractor brought the action to recover payment for the work on a *quantum meruit* basis, claiming that the changes in the work were so substantial as to constitute a breach of the contract and that by reason thereof, the contractor's compensation was not limited to the contract prices.

The court held that the doctrine that a substantial change in the subject-matter of the contract may constitute a breach of the contract has no application where the change consists only in a change in the quantity of a class of work covered by the contract. There may be no obligation to supply the additional units of the things contracted for, but if they are supplied, the contract unit price governs as to payment. It is only when the additional work ordered cannot be classified under one of the scheduled unit prices, that there is an implied contract to pay a different price.[3]

(1) 17 Corpus Juris Secundum, pages 854, 855.
(2) Sullivan v. Sing Sing, 122 N.Y. 389, 25 N.E. 366.
(3) Keystone Structural Co. v. Link Belt Co., 265 F. 329, affirmed 270 F. 705.

Putting New Link in New York's Route 28

Layer after layer of rock gives way to the steady pounding of tough drill steel.

As ribbon of concrete took shape through heavily wooded area. Through traffic was detoured at this point. Note sign at left.

Rigged with wire rope, power shovel digs into loose rock as truck stands by.

A. B. Conway (left), resident engineer, N. Y. State Highway Dept., chats with John Amodei, contractor's superintendent.

New York's Route 28, popular scenic highway through the Catskill Mountains, recently underwent relocation in the Ashokan Reservoir area, between Beechford and Hurley. Now in use, the new two-lane road is more than 11 miles in length. It was built by N. R. Corbisello, Binghamton, N. Y. Bar mats and reinforcing bars were supplied by Bethlehem.

Batch bucket drops top course over Bethlehem Bar Mat. Mat at side of strip is ready for placing. The project used a total of 525 tons of mats.

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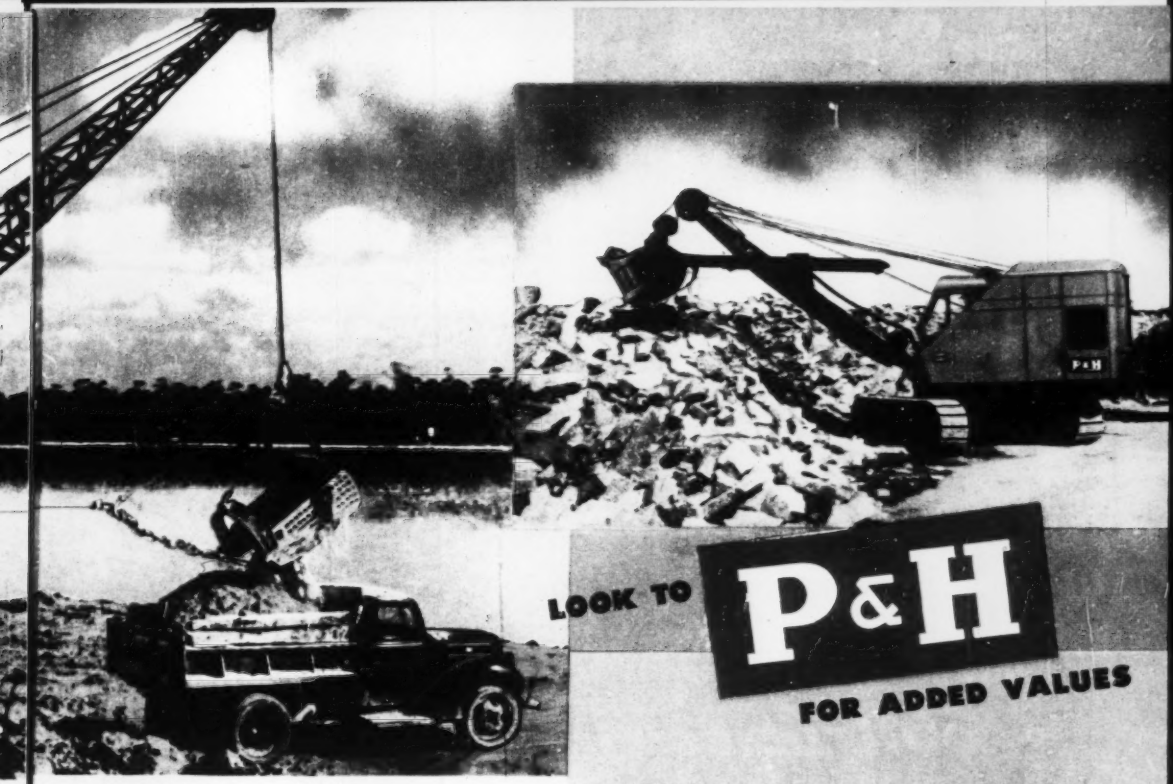

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P&H Excavators give you the industry's highest ratio of digging power to gross weight. And other P&H Added Values like these put you years ahead of the field: *All-welded construction of rolled alloy steels* — stronger, tougher; *tractor-type crawlers;* the most efficient ever put on an excavator; *low pressure hydraulic control* — easier on both machine and operator; *rapid reversing planetary chain crowd* — faster — outlasts 20 to 30 crowd cables. These are *standard* P&H features. On other machines, if they are available at all, they will cost you extra money.

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P&H Excavators and Truck Cranes are more easily converted for the various types of service shown below — with hoist and digging drums on one shaft, the need for auxiliary shafts and gearing is eliminated. You also have a choice of gas, Diesel or electric power. Ask for literature on the size you need.

BUILD SAFETY
into old, narrow roads with
SOIL-CEMENT
shoulders

Narrow pavements flanked by soft, rutted or gullied shoulders are hazardous. As many construction and maintenance engineers have found, the economical way to make such roads safe is to pave the shoulders with soil-cement.

Soil-cement hardens these shoulders, thus providing a firm extra width of pavement onto which cars may turn safely to avoid collisions or to make emergency repairs.

Shoulders paved with durable, all-weather soil-cement are stable the year around. They neither soften in spring freezing and thawing cycles nor wash away or rut in rainy seasons.

Soil-cement shoulders prevent rutting along the pavement edges, thus ending a major driving hazard. And by protecting the pavement edges from damage by wheels, frost or erosion, they eliminate difficult and costly maintenance.

Furthermore, soil-cement keeps the ground free from weeds and vegetation that hide the actual condition of the shoulder from the motorist.

Paving shoulders with soil-cement makes roads safe quickly, easily and economically. Roadside soil constitutes about 90 per cent of required materials. Usually only portland cement and water need be brought to the job. Needed machinery is readily available and paving is fast and easy.

Investigate this simple, inexpensive way of making narrow roads safe. Write for free literature. Distributed only in the U. S. and Canada.

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ENGINEERING SCHOOLS

Housing Research

In an attempt to make it possible for homeowners to have both variety in house design and economy in construction, the Small Homes Council of the University of Illinois has undertaken a 12-months' investigation into home planning and building techniques. The work is being carried on under a research grant given to the University by the newly-organized Lumber Dealers Research Council.

The project will be concerned with the study and development of a series of standard room units which can be arranged easily and economically in a number of complete house plans. Cost-saving construction techniques that have recently been developed and tested under the industry-engineered house program will be utilized.

Although essentially a planning project, the investigation is backed by research data accumulated from the actual construction of more than 40 houses on which the Small Homes Council has conducted time studies.

The study will result in a series of basic house plans which will be distributed by lumber dealers throughout the country. The investigation is particularly directed toward serving small-scale builders (those building five to 50 houses a year) who are not in a position to employ architects and engineers to develop designs and construction techniques.

Other similar studies on this subject are being made at Houston and San Antonio, Tex., where the Southwest Research Institute has taken over operation of the Revere Quality House Institute.

Tackling the housing problem for home purchasers with the cooperation of builders, a broad program of research in housing design, economics and technology, nationwide in scope, has been undertaken. Harold Vagtborg, president of the institute, says that now for the first time a comprehensive research service will be offered manufacturers of component parts, materials and equipment for house-building by an organization with specialized scientific investigation and laboratory facilities.

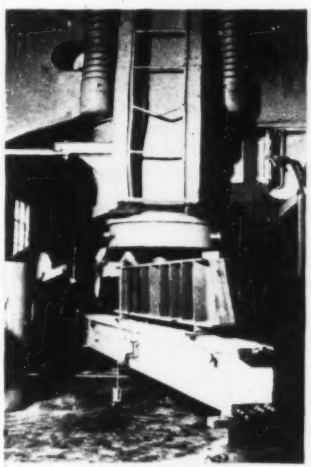
It is believed that in addition to Revere Copper and Brass, Inc., other manufacturers of quality building products will join in supporting the program, and in promoting the construction of such houses as seem to fulfill the ideal of quality at low cost.

Faculty News

Merton J. Willis from Cornell University has become assistant professor of civil engineering; and Chas. W. Newlin from Harvard has become instructor in civil engineering at Swarthmore College, Swarthmore, Pa.

John T. Howard has been appointed associate professor in the department of city and regional planning, Massachusetts Institute of Technology. He also will conduct research in the physical and financial problems of redeveloping blighted urban areas. Professor Howard was educated at Yale and M.I.T. and has had a notable career in urban planning at Cleveland, Ohio.

Vernon H. Roseb raugh, Hillsboro, Ore., has been appointed instructor in engineering at the University of Oregon. He is a graduate of Oregon State College in civil engineering and has been with the Corps of Engineers at the Bonneville hydraulic laboratory.



PRESTRESSING TEST—A study of the strength weight and cost of prestressed reinforced concrete beams has been conducted by graduate student Dameron H. Williams, Jr., of Gastonia, N. C., at the University of California Engineering Materials Laboratory at Berkeley. Several half-scale beams were tested in a 4,000,000-pound universal testing machine. Four cables run straight through the lower part of the beam above and one follows a parabolic course starting from the top of each end. There are 12 wires in the top cable and six each in the lower sets. (Wide World Photo)

Arthur J. McNair, associate professor of civil engineering at the University of Colorado has become head of the department of surveying and mapping at Cornell University, taking the place of Paul H. Halladay, who has retired.

Dean Thorndike Saville of New York University's college of engineering has been elected president of the American Society for Engineering Education. Harold L. Minkler, of the Illinois Institute of Technology is chairman of the society's cooperative education division.

Charles N. Gaylord, assistant dean of the college of engineering, University of Alabama, has resigned to become head of the department of civil engineering at the University of Delaware.

Raymond H. Parker is research assistant for the engineering and research station at Mississippi State College.

C. R. Young, engineering dean at the University of Toronto and member of the staff since 1907, has retired from the faculty.

Ralph E. Fadum is now head of the department of civil engineering at North Carolina State College, succeeding Prof. C. L. Mann, who retired last fall after over 50 years of service on the faculty. Dr. Fadum, a former faculty member at Purdue University, was graduated at the University of Illinois and Harvard University.

James M. Robbins, executive associate in the Newark College of Engineering civil engineering department, has been promoted to full professor. Professor Robbins was graduated from Massachusetts Institute of Technology in 1923 with the bachelor of science degree in civil engineering. In 1925 he received the master of science degree from the institute. During the last 20 years he has been advanced through the ranks from the grade of instructor. He has specialized in sanitary engineering work and now heads that program in the college graduate division.

Park H. Martin, past president of the Pittsburgh section of the ASCE and executive director of the Allegheny Conference on Community Development, was awarded an honorary degree of Doctor of Engineering at the June commencement of Carnegie Institute of Technology.

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OBITUARY

John M. Doorly, 72, retired assistant-chief-engineer of the New York Central System, died at Yonkers, N. Y., Aug. 4. He had been with the Central for 41 years, and had an important part in eliminating the old "Death Avenue" menace of railroad tracks on 10th, 11th and 12th avenues in New York City. As an engineer in charge of the New York Terminal district from 1927 to 1938, he directed the placing of the Central's tracks underground or elevating them on the West side. He assisted in the planning of the Grand Central Terminal.

C. R. Gow, 76, civil engineer who was in charge of the building of the Boston, Mass., Army Base in the first World War, and a former postmaster of Boston, died at Brookline, Mass., recently. He was president of Warren Bros. Co., Cambridge engineering firm. As a young engineer he worked on the construction of the first Boston subway in 1895 and later went to New York to aid in building the first subways there. He was graduated from Tufts College in 1893. He became assistant superintendent of the water department of Medford, Mass., and was also city engineer. He served in the National Guard until retirement as a colonel of engineers in 1908. He was the inventor of the Gow caisson, widely used in installing building foundations.

Frank D. Rhodes, 49, died July 16 at Chambersburg, Pa. where he was borough engineer and secretary. He had been borough engineer since 1924 and secretary since last February. He had devoted a quarter of a century to public life in the community.

Col. J. Frank Barber, 69, a civil engineer, died at Philadelphia recently. He was with the 304th Engineers of the 79th Division in World War I, and was awarded the Distinguished Service Medal in recognition of his services during the Meuse-Argonne offensive. He laid out plans for Camp Meade, Md.

Waring L. Codington, 60, since 1944 district engineer for the Canadian Pacific Railway at Winnipeg, Man., died July 28. He was an engineering graduate of the University of Nebraska.

U.S. Masters, 83, Warren, Ohio, a cement contractor for 63 years, died July 27.

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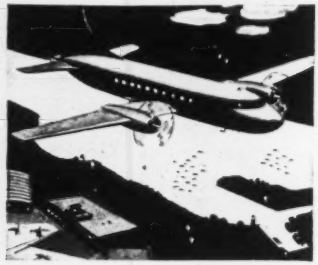

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UNIT PRICES

Chesapeake and Delaware bank stabilization job

Martin G. Imbach, Inc., Baltimore, was the low bidder of three on a small bank stabilization job for the Chesapeake and Delaware canal, about 21 miles southwest of Wilmington, Del. The low bid was $12,785, compared with the U. S. Corps of Engineers estimate of $14,555, and the high bid of $19,492.

The work consists of furnishing and hand placing 1,000 sq.yd. of 18-in. thick riprap, in pieces weighing from 50 to 300 lb., on a 6-in. blanket of sand and gravel. Contract time 60 days. Bids were taken July 19.

Oregon grading and paving job goes to Perkins Bros.

Perkins Bros., Portland, was the successful low bidder on 0.45 miles of grading and paving on the Oswego section of Oswego highway, Clackamas county, Oregon. Perkins' bid, opened June 28, was $49,366. The high of six was $61,944.

The job includes: 3,400 cu. yd. excavation; 380 cu. yd. concrete in curbs, walks and retaining walls; 50,000 lb. of reinforcing steel; 2,200 cu. yd. of rock and gravel base materials; and 1,600 tons of asphaltic concrete pavement. Wages range from $1.00 to $1.40. Owner is the State Highway Commission, Salem.

Kentucky road rebuilding low bidder is R. I. Cocke

R. I. Cocke, Mayfield, Ky., was the low of two bidders on twelve miles of gravel road reconstruction in Ballard County, Kentucky. The State Highway Department took bids July 22. Road grading is 20 to 26 ft. wide, and the trafficbound surface is 16 ft. wide.

This is the first job reported in Engineering News-Record's unit-price columns in which examples are given of Kentucky's policy of letting certain elements of rural secondary projects

(*Continued next page*)

Unit price reports on jobs cited in these columns will be mailed to readers of Engineering News-Record on request at no charge. Address: Manager, Business News Dept., Engineering News-Record, 330 W. 42nd St., New York 18, N. Y. Identify by quoting headline as used herewith, and be sure to give full mailing address.

on a per-mile basis. Both "clearing and grubbing," and "earthwork" are bid on a per-mile basis. Excavation for structures is included in the figures for drainage structures. In the case of pipe drains the unit is linear feet. Contract time is 350 calendar days, and wages range from $1.15 to $2.15.

Concrete slab bridge attracts 22 bidders

Twenty-two contractors bid July 21 on a reinforced concrete slab state highway bridge across Compton Creek Channel on Santa Fe Ave., in Los Angeles, Calif. George W. Peterson and T. W. Baker, of Santa Monica were low, at $186,007, and the second and third bidders were tied at $204,263. The amounts bid spread fairly evenly from there up to the next-to-last bidder's $279,841, and the last bidder bid $343,700. There are eight items in the tabulations, including 3,100 cu.yd. of structural concrete, 465,000 lb. reinforcing steel and 436 concrete piles totaling 12,630 ft. in length. Contract time is 225 working days.

Houston sectional tunnel bid by two contractors

Two contractors, Brown and Root, of Houston, and Merritt-Chapman and Scott Corp., New York, submitted bids on the subaqueous portions of a new sectional tunnel to be built under the Houston Ship Channel, near Morgans Point between Baytown and La Porte. Brown and Root's bid, $4,860,205, was low.

Total length of the tunnel project is 2.5 miles. Items included in the subaqueous work include launching, towing and sinking nine tunnel tubes, 1,175,000 cu.yd. of hydraulic embankment, 12,300 cu.yd. of foundation course concrete, 31,700 cu.yd. sand fill and 416,000 cu.yd. backfill. Other items include 2,840 cu.yd. roadway concrete, 33,000 cu.yd. tunnel lining concrete, 1,333,000 lb. reinforcing steel and 8,565,000 lb. structural steel. The Texas State Highway Department is the owner.

Timber bridges, Montana

Five unit-price items and one lump-sum item are included in the tabulations for one 63-ft. and one 57-ft. 3-span treated timber bridges in Lewis and Clark county, Montana, on which the State Highway Commission took bids Aug. 3. Schye and Sullivan, White Sulphur Springs, Mont., were low of our bidders at $15,924.

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CONSTRUCTION REPORTS

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Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.,

ELSIE EAVES, Manager — *J. A. MAHONEY, Reports* — *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

August 22

Ont., Brantford—J. C. McEwart, Twp. Hall, 50,000 lin. ft. c. i. watermains, valves, hydrants, meter chamberts, etc. Plans deposit $10. Gore & Storrie, 1130 Bay St., Toronto, engrs.

August 23

S. C., Greenville—City, City Hall, WW improvs., Contr. 3, Sect. I, 42 in gravity supply line from Greenville City WW Reservoir 6 to connection with existing 24 in. main at Butler and Hampton Aves. incl. installing approx. 35,500 lin. ft. 42 in. pipe and pipeline appurtenances, etc.; Sect. II, 30 in. waterline north from Reservoir 6 to connection with Transmission Main I, incl. installing approx. 9,280 lin. ft. 30 in. pipe and pipeline appurtenances, etc. Plans deposit $15. Black & Veatch, 4706 Broadway, Kansas City, Mo. consult. engrs.

Wis., Eleva—Village, water sys., incl. 50,000 gal. elevated tank, 11,746 ft. 6 and 8 in. watermains and test well. Plans deposit $15. Davy Eng. Co., 502 Main St., La Crosse, engr. CD 6/29.

August 24

Ia., Rockwell City—City, City Hall, deep well, pumps, pump house, 4,000 ft. c.i. waterlines. $30,000. L. L. Schoel & Assoc., Epencer, engr.

S. C., Greenwood—City, raw water intake in Greenwood Lake. Plans deposit $25. Wiedeman & Singleton, C. and S. National Bank Bldg., Atlanta, Ga., engrs.

August 26

Ga., Blakely—Dpt. State Parks, State Capitol Bldg., Atlanta, WW and sanitary sewer addns., at Kolomoki Mound State Park. Plans deposit $10.

†N. M., Las Cruces—U. S. Eng., Albuquerque, dismantling cat Hitchcock, Tex.t shipping and re-erecting 200,000 gal. elevated water storage tank, Las Cruces, White Sands Proving Grounds, incl. water lines, Serial No. Eng., 29-005-50-11. $30,000.

August 30

●Calif., San Diego—City, Civic Center Bldg., 15,500 ft. 36 in. rein.con. pipe connecting 24,000 ft. 30 in. line to new filtration plant and La Jolla Area. Kearny Mesa Pipeline, $1,100,000. Fred D. Pive, Water Dpt., engr. CD 2/23.

About August 31

†Texas—U. S. Eng., 606 Santa Fe Bldg., Galveston, fire and water sys., U. S. Maritime Comm. Reserve Fleet Site, McFaddin Bend, Neches River, near Beaumont, Jefferson Co., Inv. No. CIVENG-41-243-50-33.

SOON LETS CONTRACT

Tex., Lubbock—Modern Manors, Inc., Lubbock, soon lets contract water distr. sys. $35,000. Parkhill, Smith & Cooper, 1006 - 14 St., engrs. CD 7/15.

LOW BIDDERS

Ark., Fayetteville—City, 1,800 ft. earthern dam, at Clear Lake for WW supply, from S. E. Evans Constr. Co., Ft. Smith, **$202,075.** CD 7/26.

Calif., Cotati—Cotati Public Utility Dist., Cotati, July 29, water sys., from Ed. Jarvis, 3507 Willis Court, Oakland, **$57,397.**

Calif., Ione—State Div. Architecture, P. Wks. Bldg., Sacramento, July 26, concrete pipelines at Preston School of Industry, from Underground Constr. Co., 75 Ave. and San Leandro Blvd., Oakland, **$76,879.** CD 7/5.

Ia., Council Bluffs—City, City Hall, Contr. 17, chemical feeding equip., from Omega Machine Co., 9 Codding St., Providence, R. I., **$34,-831.** Burns & McDonnell Eng. Co., 95 and Troost Sts., Kansas City, Mo., engrs. CD 5/24.

Tex., Georgetown—City, City Hall, July 28, water distr. sys. extns., improvs., from R. W. Smith Constr. Co., Scanlan Bldg., Houston, **$33,332.** Est. $30,000. CD 7/18.

Tex., Grapevine—City, Gordon Tate, mayor, Grapevine, July 22, waterlines from The Southwest Co., W. T. Waggoner Bldg., Fort Worth, **$41,010.** CD 7/5.

Wash., Tacoma—City, City Hall, install 900 ft. 12 and 16 in. pipe across Hylebos waterway at E. 11 St., from Columbia Dredging Co. and Walter McCray, Mercer Island, **$56,345.** CD 8/2.

CONTRACTS AWARDED

Fla., Jacksonville Beach—City, water distr. sys., to Boyce Co., Inc., Clearwater, **$26,396.**

Fla., Jacksonville Beach — City, Jacksonville Beach, supplying, install. one 200,000 gal. steel water tank on steel tower for WW improvs., to R. D. Cole Mfg. Co., Newnan, Ga., **$31,435.** CD 2/4.

Mass., Attleboro—R. Wolfenden & Sons, Inc., Robert St., 350,000 gal. rein.-con. reservoir and watermains, piping, etc., Industrial Water Sys., to Westcott Constr. Co., 52 North Washington St., North Attleboro, **$34,950.** Thomas Worcester, Inc., 84 State St., Boston, engr.

S. M., Jal—City, watermain extens., to P. R. Burn, Box 1111, Las Cruces, **$40,000.** Ashley G. Classen & Assoc., 504 N. Kansas St., El Paso, Tex., engrs. and archts.

O., Toledo—Kasco Mills, 1352 E. Broadway, water tower at plant to Pittsburgh-Des Moines Co., Neville Island, Pittsburgh, Pa. Approx. **$30,000.**

O., Toledo—Comrs. Lucas Co., Courthouse, waterline and sanitary sewer at Lucas County Fairgrounds to L. H. Halpin Co., 2301 Pemberton Dr., **$45,120.** Est. $58,349. Bids 7/8, awarded 7/28. CD 6/29.

Tenn., Cookeville—City, 500,000 gal. water tank, to Chicago Bridge & Iron Co., 332 S. Michigan St., Chicago, Ill., Approx. **$30,000.**

Tex., Bellaire—J. S. Norman Building Corp., 4815 Richmond St., Houston, c. i. waterlines, own forces. Approx. **$30,000.** CD 7/21.

Tex., Duncanville—Hearst Paxton & D. L. Hopkins, Jr., Great Natl. Life Bldg., Dallas, c. i. waterlines in 88 acre sub-division, to O. L. Collins Co., 608 N. Henderson St., Dallas, **$46,000.**

Tex., Fort Worth—City, City Hall, addnl. 6 to 14 in. c.i. waterlines, various locations. Purchase and Hire, **$45,000.** W. O. Jones, city engr. CD 2/4.

Tex., Port Lavaca—City, c. i. waterlines, force account. **$40,000.** Garrett Eng. Co., 1806 Milam St., Houston, engr. CD 5/24/48.

Tex., Spring Branch (Houston P. O.)—Hamilton & Wright, Wright Loan & Securities Co., 1st. Natl. Bank Bldg., Houston, waterlines, facilities, own forces. Approx. **$30,000.**

Tex., Wichita Falls — R. G. Hughes, Pampa, waterlines and facilities. Own forces. **$40,000.**

Wyo., Cody — City, Cody, filter bldg., convert existing storage basin into 2 settling basins, misc. work, on city ww. sys., to James R. Kenney, Inc., 582 High St., Denver, Colo., **$58,946.** Bids 7/19.

Ont., Port Arthur — Municipality, Port Arthur, watermains various streets to Tomlinson Bros. Ltd., 311 P. U. Bldg., Approx. **$50,000.**

Ont., Tweed—Village, G. D. C. Morton, clk., Village Hall, laying approx. 1 mi. watermains and sewers, to Port Hope Constr. Co., 521 Sammon Ave., Toronto, Approx. **$36,450.** Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, engrs. Bids 7/18. CD 7/7.

Que., Buckingham—Municipality, 8,500 ft. c.i. water pipe in Beauchampville Ave., and 900 ft. c.i. watermain in Pane St., to Kelly & Co., Aylmer, **$45,000.** George Thomas, town engr.

Que., Les Eboulements—Municipality, water sys., own forces, under supervision Ludger Trembley, Les Eboulements. Approx. **$50,000.**

Que., Montmorency—Municipality, water intake, to Lucien Plante, Montmorency. Approx. **$35,000.**

Que., Montreal—Municipality, enlargements and electrical work, MacTavish St. Pumping Station, to Pentagon Constr. Co. Ltd., 1225 Bishop St., Montreal, **$719,629.** Bids 7/30. CD 7/11.

Que., Montreal — Municipality, reconditioning watermain Atwater Ave., to Pentagon Constr. Co., Ltd., 1225 Bishop St., **$88,290.** Bids 7/30. CD 7/11.

Que., Quebec City—Municipality, watermains in des Chenes Ave., to Savoie Rd. and to Laurel River, own forces, **$19,000.** Ed. Hamel, city engr.

SEWERS, WASTE DISPOSAL

BIDS ASKED

August 23

Pa., South Connellsville—South Connellsville Sewerage Auth., sanitary sewerage sys., sewage treatment plant, appurtenances. Plans deposit $30. Richard J. Harman, 222 N. Third St., Harrisburg, consult. engr. CD 4/18.

August 30

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., 501 Hall of Records, 4.53 mi. 8-to 12 in. vitr. clay sanitary sewers in Church St. Proj. C.I. 1264, $135,315. Bids 5/3 rejected. CD 4/20; 1.6 mi. 6-to 10-in. vitr. clay sanitary sewers in Center St., C.I. 1268, Bellflower, $50,950. C. E. Arnold, co. engr.

SOON LETS CONTRACT

Tex., Lubbock—Modern Manors, Inc., Lubbock, soon lets contract sanitary sewerage sys. $60,000. Parkhill, Smith & Cooper, 1006 14 St., engrs. CD 7/15.

LOW BIDDERS

Ala., Tuscaloosa — Alabama State Hospital, c/o Dr. J. S. Tarwater, July 28, sanitary sewers, treatment plant, from Sullivan Long & Hagerty, Bessemer, **$88,522.** CD 7/6.

Calif., Los Banos—City, City Hall, July 20, sewer lines, from W. H. Lyles Co., 5251 Harvey St., Fresno, **$54,862.** W. E. Bedesem, City Hall, city engr.

Calif., Los Angeles — City, Aug. 3, storm drain, appurtenances Ave. 52 and Figueroa Drainage Dist., from Charles P. Brown & Paul Yukitch Constr. Co., 6465 Northside Dr., **$114,-787.** Est. $190,167. CD 7/25.

Colo., Denver—City and Denver Co., City-County Bldg., Denver, cancelled bids to have been opened July 13, sewers, appurtenances, for sanitary drainage in and for Cook Sanitary Dist. 5, **$188,500.** Will re-advertise. CD 7/7.

Ind., Sheridan—Town Bd., Aug. 1, sewage treatment plant, sewerage sys., from C & C Constr. Co., 2001 E. Pontiac St., Fort Wayne, **$312,000;** and Miles Hernley, Parker, **$312,000,** Est. $279,000. CD 7/14.

Md., Baltimore—Mayor & City Council, City Hall, Baltimore, Storm Water Contr. 248, from John Mattricciani & Sons, 409 S. Caroline St., **$57,367.** CD 7/26.

Ore., Portland—City, City Hall, Glisan Greeley unit, city sewerage sys., from General Constr. Co., 4456 N. W. Front St., **$983,950.**

Tex., Fort Worth—City, T. W. Jones, city mgr., Aug. 4, sanitary sewers, incl. mains laterals, in Green Park area from F. S. Oldt & Co., Century Bldg., **$67,606.** Est. $94,000. C. H. Tardin, dir. Pub. Wks.

Tex., Texas City—Galveston County Water Control & Imprvt. Dist. 4, Texas City, cancelled bids to have been opened July 22, sanitary sewerage sys. extens., imprvs. **$50,000.** CD 7/8.

Va., Capron—State of Virginia, Richmond, July 26, sewage treatment plant, at Southampton Prison Farm from Birkelbaum, Inc., 1737 Summitt Ave., Richmond, **$58,560.**

Wash., Davenport—City, City Hall, sewage treatment plant, from A. H. Sandall, E. 902 5 St., Spokane, **$79,270.** Est. $87,000. W. L. Malony, Symons Bldg., Spokane, engr.

CONTRACTS AWARDED

Calif., Santa Clara—City, City Hall, storm sewers in Stockton Ave., Lafayette and Matthew Sts. to L. C. Smith First and Railroad Sts., San Mateo, **$65,485.** Bids 8/1, awarded 8/1.

Del., Wilmington—New County Levy Court, Public Bldg., sanitary sewers, Belvidere Sanitary Dist., to James Julian Elsmere, **$105,758.** Warren Vanarsdale, c.o owner, dist. engr.

Fla., Jacksonville Beach—City, sewage collection sys. improvs., to The Higgins Co., Sarasota, **$103,003.** CD 2/4.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $28,000; other public works $50,000; industrial buildings $68,-000; other buildings $250,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.;

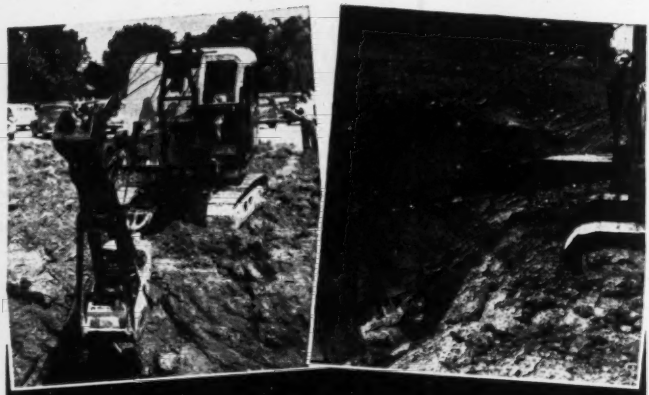
LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
● Project of $1,000,000 or over.
ENR Engineering News-Record
CD Engineering News-Record Construction Daily



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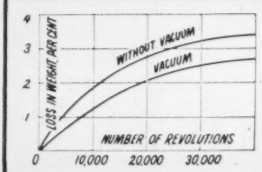

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Ia., Denison—City, City Hall, sewers, to Dobson Bros. Constr. Co., 809 First National Bank Bldg., Lincoln, Neb., **$51,196.** Bids 7/18. Lechner Eng. Co., Ames, engr.

Miss., Corinth—City, City Hall, sewer lines, to J. B. McCrary Corp., 22 Marietta St., Bldg., Atlanta, Ga., **$219,705;** treatment plant to G. L. Tarlton Contg. Co., 3050 Dale St., St. Louis, Mo., **$134,500.** Bids 7/27. CD 7/15

●**N. J., Hackensack**—Bergen Co.-Hackensack River Sanitary Sewer Dist. Auth., Bergen Co. Administrative Bldg., Constr. 1, sewage treatment plant, Overpeck Valley Joint Sewage Works, to Terminal Constr. Corp. and Young Foundation Corp., 194 Hackensack St., Wood-Ridge, **$4,246,775.** Bids 7/5. CD 7/12, under LB.

Okla., Seminole — City, sanitary sewer lines, sewage disposal plant extens., to J. L. Fite, Seminole, **$59,498.** Est. $75,000. Awarded 7/28. V. V. Long & Co., Colcord Bldg., Oklahoma City, engrs.

Ore., Corvallis—City, City Hall, 6,500 ft. 18-to 30-in. storm sewers, 6,000 ft. 8-to 18-in. sanitary sewer, to Ramsay Constr. Co., Box 597, **$64,331.** Est. $78,912. Bids 7/30. CD 7/18.

●**Pa., Phila.**—Phila. Dpt. P. Wks., City Hall Annex, Lower Delaware Low Level Intercepting sewer, SD 105 SE, to James N. Driscoll Co., 27 E. Durham St., Phila., **$1,827,690.** Bids 7/29. CD 7/5.

Tex., Bellaire—J. S. Norman Building Corp., 4815 Richmond St., Houston, sewage disposal plant, lines, own forces. Approx. **$65,000.** CD 7/21.

Tex., Port Lavaca—City, sanitary sewerlines in Negro Sect., own forces. **$65,000.** Garrett Eng. Co., 5908 Almeda St., Houston, engr.

Tex., Wichita Falls—R. G. Hughes, Pampa, sanitary sewers. Own forces. **$60,000.**

Utah, Bountiful — City, W. H. Williams, recdr., Bountiful, sanitary sewer collecting sys., to J. R. Thayn, 2670 Berkeley Circle, Salt Lake City, **$185,355;** sewage disposal plant, to Better Building Co., Bountiful. Approx. **$81,000.** Caldwell, Richards & Sorenson, Templeton Bldg., Salt Lake City, engrs. Bids 7/21, awarded 8/2.

Utah, Ogden—City, storm sewer extens., to Wheelwright Constr. Co., P. O. Box 109, **$81,766.** Bids 6/21. C. R. Kimball, city engr. CD 2/14/44.

Wash., Olympia—City, City Hall, 2,600 ft. 24-to 36-in. intercepting sewers, to Valley Constr. Co., 2708 Railroad Ave., Seattle, **$61,593.** Est. over $85,000. Bids 7/26. CD 7/13.

Wis., Kenosha — City, laying storm sewers, to Markus Thomsen, Kenosha, **$50,764.** Bids 7/28, awarded 7/29. CD 6/30.

Wis., Milwaukee — City, sanitary and storm sewers in N. 27 St. and W. Lawn Ave., to R. W. Constr. Co., 4831 W. State St., Zone 8, **$84,290.** Bids 7/26, awarded 8/1.

Ont., Port Credit—Municipality, Port Credit, sanitary sewers to Swansea Constr. Co. Ltd., 363 Rogers Rd. Approx. **$75,000.** Bids 7/13. CD 7/7.

BRIDGES

LOW BIDDERS

Illinois—State Hy. Dpt., Springfield, Aug. 5, rein.-con. superstructures for 2 bridges, Ill. Rt. 1, Will Co., from Joliet Bridge & Constr. Co., 68 N. Chicago St., Joliet, **$130,889.** CD 7/26.

Ill., Chicago—Bd. Comrs. Cook Co., County Bldg., Aug. 2, Tri State Line A. grade separation, new highway, between Chicago and Detroit, from Arcole Midwest Corp., Evanston. **$154,774.**

Maryland—State Hy. Dpt., Baltimore, Aug. 2, steel beam, concrete bridge over South River, Contr. AA 388-4-315, Anne Arundel Co., from Vaughan Bridge Co., Defence Hy., Annapolis. **$256,308.** CD 7/20.

Michigan—State Hy. Dpt., Lansing, Aug. 4, bridge carrying U. S. 12 over Ox Creek, Benton Harbor, M. B. 3 of 11-2-1 Ct., Berrien Co., from W. H. Harvie, Birmingham, **$58,557;** bridge carrying Grand Ave. over Edsel Ford Expressway, Detroit, U. H. 22 of 82-22, 10, Ct., Wayne Co., from Darin & Armstrong, 2041 Fenkel St., Detroit, **$163,787.** CD 7/20.

Montana—State Hy. Dpt., Helena, Aug. 3, 200 ft. steel, concrete bridge over Tongue River, Crow Agency-Broadus Rd., Rosebud Co., to Walter Mackin & Sons, Billings, **$71,064.** CD 7/27.

●**New Jersey**—State Hy. Dpt., Trenton, rejected bids July 7, double-leaf bascule Sea Bright-Rumson Bridge over south branch of Shrewsbury River, F. A. P. S-111 (1), Monmouth Co., L. B. **$1,472,124.** CD 7/13, under LB.

New Jersey—State Hy. Dpt., Trenton, Aug. 4, elimination Erie R. R. grade crossing, Wagaraw Rd., Hawthorne, FAGM-69 (1) Off., Passaic Co., from Union Building & Constr. Corp., 631 Main Ave., Passaic. **$521,963.** CD 7/18.

CONTRACTS AWARDED

Georgia—State Hy. Dpt., Atlanta, overhead bridge and approaches at Central of Georgia R. R. near Milner, Barnesville-Griffin Rd., FG-1-D (2) and F-1-D (3), Lamar Co., to C. L. Rhodes, Decatur, **$153,718*****bridge at Ohoopee River on FAS RT. 708, State Rt. 56 to Covena Rd., S-6708 (1), Treutlen and Emanuel Counties, to Trussell Constr. Co.,

(Continued on page 78)

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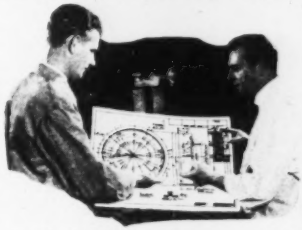

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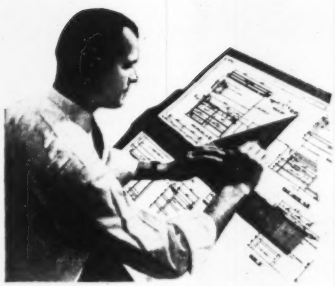

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(Continued from page 76)

Columbus, **$52,108*****bridge, approaches at Kuchafooree Creek, Weston-Preston Rd., approx. 3 mi. south of Preston, S-224 (2), Webster Co., to Coffee Constr. Co., Eastman, **$61,778.** Bids 7/29, awarded 8/2. Grand total $267,604. CD 7/20.

Massachusetts—Commonwealth of Massachusetts, Dpt. P. Wks., 100 Nashua St., Boston, bridge, approaches, Bridge and Washington Sts., Fagan 319A(1), Salem, to Berke Moore Co., Inc., 8 Newbury St., Boston, **$88,075.** Bids 7/19, awarded 8/5. CD 7/28, under LH.

Minn., Rochester—City, F. R. Finch, clk., City Hall, rein.-con. bridge over Zumbro River, etc., to L. M. Feller Co., Rochester, **$226,785.** Bids 8/1. CD 7/8.

Ont., Toronto—Canadian National Rys., 360 McGill St., Montreal, Que., E. R. Logie, 436 Union Station, Toronto, ch. engr., subway east bank Don Valley, to A. E. Rule, Ltd., 1440 Millwood Rd., Leaside. Approx. **$100,000.** Bids 7/15. CD 7/8.

STREETS AND ROADS

BIDS ASKED

August 30

Calif., Los Angeles—Rd. Supervs. Los Angeles Co., 501 Hall of Records, imprv. Normandie Ave., Manchester to Century Blvd., Inglewood. Approx. $67,500. Plans deposit $5. C. E. Arnold, co. engr. CD 9/13/45.

September 1

Kan., Arlington—City, c/o Mayor, City Hall, street imprvs. $60,000.

SOON LETS CONTRACT

Tex., Lubbock—Modern Manors, Inc., Lubbock, soon lets contract asph. street and area paving. $60,000. Parkhill, Smith & Cooper, 1006-14 St., engrs. CD 7/18.

LOW BIDDERS

Arizona—State Hy. Dpt., Phoenix, July 27, grading, drainage select material, aggregate base and bit. (11⅛ mi. Tucson-Picacho Hy. State Hy. St. FI. 71-A, 71-B, Pima Co., from Arizona State Hy. Dpt., P. O. Box 596, Phoenix, **$511,078.** CD 7/18.

†California—Bureau Public Roads, General Services Admin., Phelan Bldg., San Francisco, 7, emerg. Act $818 mi. Proj. Calif. FH 38F, Sonora Pass, Stanislaus National Forest, Tuolumne Co., from Kirst & Sons, 836 W. Atlantic St., Altadena, **$170,964.** CD 7/29.

†California—Bureau Public Roads, General Services Admin., Phelan Bldg., San Francisco, by. imprv. 9.222 mi., Calif. 38F, Father Gaskell, Lassen National Forest, Proj. FH-92-B, Lassen Co., from Malfitano & Son, Inc., Box 750, Pittsburg, **$310,-697.** CD 7/29.

Illinois—State Hy. Dpt., Springfield, Aug. 5, bit. surf. tr. 7 mi., Illinois Rt. 37, (2) bridges, Clinton Co., from John Mackler & Co., 10 and Washington Sts., Chicago Heights, **$194,157*****bit. seal and bit. surf. tr. U. S. Rt. 50 and 67, Ill. Rts. 15, 38, 164, 3, 166, Clinton, Washington, St. Clair, Greene, Jersey and Macoupin and Montgomery Counties, from Bituminous Fuel & Oil Co., 509 First National Bank Bldg., East St. Louis, **$137,237*****bit. surf. 1.61 mi. Ill. Rt. 42, Cook Co., from Ellinger Constr. Co., 30 N. LaSalle St., Chicago, Zone 2, **$54,525*****bit. surf. 1.7 mi. Ill. Rts. 83 and 5, Cook and DuPage Counties, from Crowley Sheppard Asphalt Co., P. O. Box 144, Maywood, **$410,147*****bit. resurf. 1.58 mi. Ill. Rt. 22, and 7.45 mi. Ill. Rt. 1, Cook and Will Counties, from Gallagher Asph. Co., 181 St. and Indiana Ave., Chicago Heights, **$237,000*****resurf. 4.76 mi., concrete and bit., Ill. Rt. 7, Lake Co., Peter Baker & Son Co., 1190 Conway Rd., Lake Forest, **$367,302*****bit. resurf., concrete widen. 4.26 mi. Ill. Rts. 22 and 99, Lake Co., from Skokie Valley Asph. Co., 3228 Harding Ave., Des Plaines, **$316,585*****bit. resurf. 18.15 mi. Ill. Rts. 37 and U. S. 50, Marion and Clinton Counties, from E. J. Eff Constr. Co., 421 York St., Quincy, **$664,655*****bit. resurf., concrete patching 9.03 mi. Ill. Rt. 3, Randolph Co., from Thompson Asphalt Co., 6 and N. Cambridge Sts., Madison, **$323,146*****concrete widen. 19.27 mi. U. S. Rt. 460, St. Clair Co., from Maurice Hoffken & Co., Box 385, Belleville, **$325,826*****bit. resurf. 10.51 mi. Ill. Rt. 1 and U. S. Rt. 45, White Co., from Jefferson Asphalt Co., 1509 Casey St., Mt. Vernon, **$380,012*****bit. resurf. 5.86 mi. U. S. Rt. 20, Winnebago Co., from Rockford Black Top Constr. Co., 1615 Westchester Dr., **$208,725.** CD 7/26.

Ill., Chicago—Bd. Comrs. Cook Co., County Bldg., paving 47 St. from I. to Harlem Aves., from Standard Paving Co., 30 N. LaSalle St., **$241,416.**

Maryland—State Hy. Dpt. Baltimore, Aug. 2, b. conc. Spec. B, 2.822 mi. State Rt. 36, from southern town limits, Lonaconing northerly to Midland, Constr. Proj. 2-615, Allegany Co., from Cumberland Contr. Co., Cumberland, **$123,660*****gray. surf. bit. stabilization 5.889 mi. section LaPlata-Indian Head Rd., beginning at State Rt. 5, exten. southeasterly toward Mason Springs, Constr. CH 286-1-515, Charles Co., from F. P. Asher Jr. & Sons, West Ext., Annapolis, **$300,656*****resurf. 2.763 mi. sect. State Rt. 589, from end of concrete surf. approx. 2 mi. south of Mt. Lake Park, exten. southerly toward Gorman, Constr. G 253-615, Garrett Co., from Keeley Constr. Co., Clarksburg, W. Va., **$93,215.** CD 7/26.

Md., Baltimore—Mayor & City Council, City Hall, Aug. 2, sheet asph. resurf. Hy. Contr. 1011, from Baltimore Asph. Block & Tile Co., 1320 N. Monroe St., **$130,995*****sheet asph. repaving Hy. Contr. 1010, from National Paving & Contg. Co., 4200 Menlo Dr., **$112,084*****conc. streets, Hy. Contr. 1009, from P. Flanigan & Sons Inc., 2405 Loch Raven Rd., **$109,418.** CD 7/27.

Mass., Roxbury—City of Boston, Dpt. P. Wks., City Hall Annex, Boston, Aug. 1, sheet asph. paving Geneva Ave., etc., from Central Constr. Co., 228 Southampton St., **$65,208.** CD 7/21.

Michigan—State Hy. Dpt., Lansing, Aug. 4, grading, drainage structures, c. conc. 0.884 mi. M. 18 and M. 61 from Erie St. east on Cedar St. and north on Silverleaf St. to First St., S. P. F. 26-12, C4, Gladwin Co., from Hodkiss & Donna, Petoskey, **$349,281*****grading, drainage structures, stabilized aggregate surf. 6.858 mi. M. 55, from Grant-Tawas Twp. line east to U. S. 23, Tarvas City, S. P. F. 35-6, C3, Iosco Co., from Johnson-Green Co., Ann Arbor, **$217,236*****grading, drainage structures, c. conc. 1.217 mi. U. S. 10 A from Eastman Rd. southeast to Buttles St., Midland, S. P. F. 56-8, C2, Midland Co., from W. H. Knapp, Monroe, **$211,555*****grading, drainage structures, c. conc. and stabilized aggregate surf. course 1.728 mi. M. 21 from southwest of Hudsonville, northeast into Hudsonville, S. P. FI. 70-49, C6, Ottawa Co., from Hertel & Devo, 5295 Division St. S., Grand Rapids, **$168,677.** CD 7/28.

N. J., Burlington—City, road constr. E. Broad St. from Delaware Conty Co., 1633 Hamilton St., Trenton, **$94,872.** S. R. Probasco, city engr. CD 10/30/46.

Pennsylvania—State Hy. Dpt., Harrisburg Aug. 5, bit. surf. 17.438 ft. L.R. 276 (2), T.R. 43, Cambria Co., from Putnam & Greene, Inc., Phillipsburg, **$193,576*****c. conc. one rein.-con. bridge, four 43 in. concrete culverts, exten. 2 rein.-con. structures and bit. 15,356 ft. L.R. 107 Sect. 8, T.R. 2330 and 332, Centre Co., from B. B. Constr. Co., Phillipsburg, **$197,377*****bit., I-beam bridge and drainage 533 ft. L.R. 857, Sect. 15, Clearfield Co., from James E. Minnich, Inc., Womelsdorf, **$66,399*****wid'n. pavement with crushed aggregate base or c. conc. base, bit. surf. incl. exten. existing structure 6,754 ft. L.R. 1101 Sect. 2, Lancaster Co., from Charles Riebe, Lansford **$65,388*****bit. surf. extens. for existing structures; build up of pavement with crushed aggregate base and bit. surf. 32,329 ft. L.R. 238, Spur A (1-R) 238 Spur C (1-R) 238, T.R. 418, U. S. 62, Mercer Co., from Smith Constr. Co., 1926 Glenwood Ave., Youngstown, O., **$306,153*****c. conc. pavement incl. 10 rein.-con. structures exten. of 2 existing concrete structures; one I-beam bridge and bit. surf. 26,802 ft. L.R. 195 (6C) 229 (2A) T.R. 19 Sect. 3, 13, 15, 23, Perry, Juniata and Snyder Counties, from James Julian, 405 S. Du Pont Rd., Elsmere, **$1,643,883*****bit. resurf., build-up existing pavement with crushed aggregate base, bit. surf., patching with c. conc. base sections 7,514 ft. L.R. 169 (10) T.R. 6, Tioga Co., from Tri-State Asphalt Corp., Martins Ferry, O., **$289,586*****bit. surf. incl. constr. rein.-con. box and 2 metal plate pipe arches and constr. I-beam bridge 26,305 ft. L.R. 925 (4), T.R. 30 Sect. 3, 4, 5, 6, 7, from S. H. Putman, Honesdale, **$153,219*****bit. surf. 4,063 ft. L.R. 38, sect. 15, T. R. 518, Mercer Co., from The Baldwin Bros. Paving Co., 1690 Union Commerce Bldg., Cleveland, 14, O., **$139,565.** CD 7/26.

●South Dakota—U. S. Engr., 1709 Jackson St., Omaha, Neb., Aug. 3, West Access road, Oahe Reservoir Proj., Inv. 25-666.50-16, from P. A. Headlund Constr. Co., 124 1 Ave., Aberdeen, **$89,870.** Est. $100,752. CD 7/25.

Tex., San Antonio—City, City Hall, returned unopened bids to have been opened July 26, asph. paving, from south end of Arsenal to S. Alamo St. **$60,000.** Will re-advertise. CD 7/19.

CONTRACTS AWARDED

Calif., Oakland—Alameda Co., Courthouse, imprv. Dumbarton Rd. and Thornton Ave., from Jarvis Rd. to Centerville, Washington Twp., to Clements & Co., Box 277, Hayward, **$141,810.** Bids 8/2. CD 7/21.

●Georgia—State Hy. Dpt., Atlanta, to Wright Constr. Co., 504 25 Ave., Columbus, repairs, removal slides etc. 7.728 mi. Valley Head, Ala.-Summerville Georgia Hy. 48, beginning at Georgia-Alabama State Line and exten. toward Summerville FAP-F-2 (6) CT 2 and FAP-2 (7) CT 2, Chattahoga Co., **$131,391.** grading, paving, bridges 5.410 mi. Gay-Senoia Rd., beginning at Meriwether-Coweta Co. line and ending at State Rt. 16, Senoia, F-074-1 (1), Coweta Co., **$285,860;** wid'n, resurf. 6.870 mi. Tenn.a-Chatsworth Rd., beginning at south limits of Chatsworth and exten. toward Tennga, excepting 0.359 mi. at Mill Creek F-018-1 (2) CT 1, Murray Co., **$299,461*****to T. D. Lamb, Jr., Vidalia, grading, paving 11.286 mi. Union-Point-Lexington Rd., beginning at end of present paving approx. 5 mi. north of Union Point and exten. toward Lexington S-0899 (2), Greene and Oglethorpe Counties, **$145,094;** grading, paving, 5 bridges 8.279 mi. Lyons-Cobbtown Rd., beginning at Laurens St. in Lyons and exten. toward Cobbtown, ending at point approx. 2,500 ft. north of Ohoopee River S-365 (1), Contr. 2, Toombs and Tattnall Counties, **$136,420.**

To Scott Constr. Co., Thomasville, grading, paving, 5 bridges 8.279 mi. on Lyons-Cobbtown Rd., beginning at Laurens St. in Lyons and exten. toward Cobbtown, ending at point approx. 2,500 ft. north of Ohoopee River S-365 (1), Contr. 2, Toombs and Tattnall Counties, **$183,398*****to W. L. Robinson Constr. Co., College Park, grading, paving, 1 bridge 7.574 mi. on Gay-Senoia Rd., beginning at Coweta-Meriwether Co. line and ending at present paving north of Gay on Fay-Luthersville, F-074-1 (2), Contr. 1, Meriwether Co., **$291,-278*****to Trussell Constr. Co., Columbus, grading, paving 1 bridge 7.574 mi. Gay-Senoia Rd. beginning at Coweta-Meriwether Co. line and ending at present paving north of Gay on Fay-Luthersville, F-074-1 (2), Contr. 2, Meriwether Co., **$70,381*****to Cemulcee Constr. Co., McRae, grading, local material surf. 2 bridges 0.923 mi. Alamo-Scotland Rd., beginning at the Southern R. R. in Scotland and exten. toward Alamo S-248 (3), Telfari and Wheeler Counties, **$92,195.**

to E. M. Beckham Constr. Co., Perry, wid'n. shoulders, drainage extens. 9.536 mi. Macon Perry Rd., beginning in Perry at point approx. 0.9 mi. south of North City limits and exten. toward Macon, excepting 1.196 mi. as Mossy Creek FI-401 (4), Houston Co., **$83,815*****to Hatcher & Morrow, Crawfordville, grading, paving 7.254 mi. Warrenton-Gibson Rd., beginning at Warren-Glascock Co. line and ending at intersections with State Rt. 16 in Warrenton, S-0962 (2), Warren Co., **$153,110*****to R. A. Bowen, Macon, grading, paving 1 bridge 4.370 mi. Walnut Creek, Macon-Gray Rd. beginning approx. 0.6 mi. north of Macon and ending near Bigg-Jones Co. line, F-0024 (1), Bibb and Jones Counties, **$178,115*****to Georgia-Alabama Paving Co., 2011 Andrews Rd., Columbus, wid'n., resurf. 9.606 mi. present pavement with Greenville-Chipley Rd., beginning at Greenville and ending at Duran F-024-1 (1) and F-025-1 (1), Meriwether Co., **$309,200*****to John Monaghan, Inc., Pelham, grading 2.572 mi. Racepond-Hoboken Rd., beginning at State Rt. 4 at Racepond and ending at State Rt. 40 in Hoboken, F-073-1 (1), Charlton and Brantley Counties, **$187,377.** Grand total $2,550,409. Bids 7/29, awarded 8/2. CD 7/20.

Kan., Kinsley—City, A. E. Wilson, clk., City Hall, street imprvs., incl. 14,670 sq. yd. 6 in. rein.-con. pavement, 5,475 lin. ft. 6 in. integral curb, 2,651 sq. yd. sidewalks, 7 catch basins, 7 drop inlets, one flood gate, 3,197 lin. ft. 18 and 24 in. rein.-con. pipe, etc., to Arnold Swanson & Co., Hastings, Neb., **$75,000.** Bids 7/28, awarded 8/1. CD 7/12.

Minnesota—State Hy. Dpt., St. Paul; road mixed-bit. wearing course, approx. 26.5 mi. Marshall-Redwood Falls, to L. Nelson & Co., Brainerd, **$57,941.** Bids 7/29.

Montana—State Hy. Dpt., Helena, grading, draining, grav., oiling 13 mi. Lewistown-Roy Rd. 38 ft. treated timber bridge, Fergus Co., to H. G. R. Co., Great Falls, **$335,947*****grading, grav. and draining 14.7 mi. Clearwater-Big Fork Hy., Missoula Co., to McLaughlin, Ford Bldg., Great Falls, **$319,872*****grading, grav., draining, surf. 8.25 mi. Manieke-Kalispell Rd., Flathead Co., to Union Constr. Co., Missoula, **$204,133*****grading, grav. draining surf. 3 mi. Toston-Bozeman Rd., Broadwater and Gallatin Counties, to F. & S. Constr. Co., 1300 Chicago St., Butte, **$139,249*****grading, draining 15 mi. Ashland-Lame Deer unit Crow Agency-Broadus Rd., Rosebud Co., to Albert Lalonde Sidney, **$179,181.** Grand total $1,178,-352. Bids 8/3. CD 7/27.

N. Y., Binghamton—Broome Co. Hy. Dpt., Binghamton, Aug. 2.29 mi. New Ireland-Airport County Rd. No. 71, Part 2, Proj. No. 91, to Binghamton Constr. Co., Inc., 207-09 Marine Midland Bldg., **$189,452.** Bids 8/1. CD 7/22.

●Pennsylvania—State Hy. Dpt., Harrisburg, c. conc. incl. 43 rein.-con. structures, one I-beam bridge, bit. surf. crushed aggregate base 28,793 ft. L.R. 229, T.R. 15, Sect. 13, 14, 15, and U.S. 15 between Selinsgrove and Port Trevorton, Snyder Co., to Hempt Bros., R.D. 1, Camp Hill, **$1,385,488.** Bids 7/22, awarded 8/4. CD 7/26, under LH.

●Pennsylvania—State Hy. Dpt., Harrisburg, wid'n. 7.61 mi. pavement with crushed stone base, replacing existing center lane and resurf. new base and existing pavement with bit. incl. constructing rein.-con. box, bit. surf. crushed stone base, between Coatesville and Lancaster Co. line, Chester Co., to Berlanti Constr. Co., 15 Oakland Ave., Harrison, N. Y., **$802,874;** conc. 6.24 mi., 1 rein.-con. structure, bit. surf., one rein.-con. bridge U. S. 6, Warren Co., to S. J. Groves & Sons Co., 53 Messenger St., Johnstown, **$771,824.** Bids 7/22. CD 7/26, under LH.

Pa., Phila.—Phila. Transportation Co., Broad and Locust St., roadway repairs, W. Phila. Area, own forces. Approx. **$75,000.**

Tex., Bellaire—J. S. Norman Building Corp., 4815 Richmond St., Houston, c. conc. paving, curbs and gutters, own forces. Approx. **$80,-000.** CD 7/21.

Tex., Dallas—Dallas Co., Lynn Lawther, comr., Courthouse, asph. road resurf. 120 mi. Precinct 1, Approx. **$72,000;** 70 mi. Precinct 2, Approx. **$140,000;** 50 mi. Precinct 3, Approx. **$120,000;** 53 mi. Precinct 4, Approx. **$111,300,** force account. Grand total $443,300. CD 6/22.

Alberta—Province of Alberta, Edmonton, road construction from top of Grouard Hill to Peace River, to Thordarson Constr. Co., Peace River, **$150,000.** CD 12/3/43.

Ont., Brockville—Town, H. W. Carswell, clk., Town Hall, reconstruction and paving King (st. W. to Harvey Constr. Co. Ltd., R. R. No. 1, Kingston. Approx. **$137,000.** G. T. Hueston, c/o owner, engr.

(Continued on page 80)

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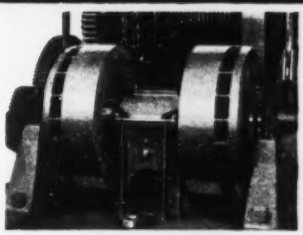

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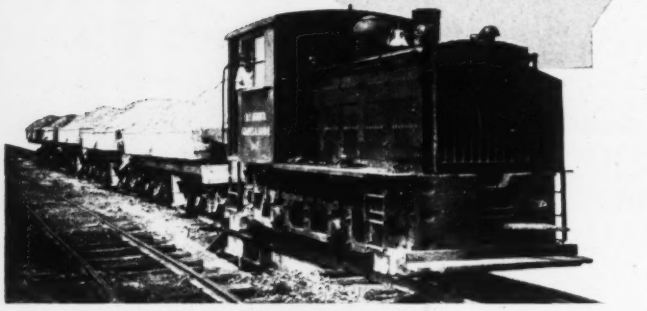

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PLYMOUTH LOCOMOTIVE WORKS

DEPT. A-4 **PLYMOUTH, OHIO**

(Continued from page 78)

EARTHWORK, WATERWAYS

BIDS ASKED

August 23

†Arkansas—U. S. Eng., P.O. Box 309, Broadway, Little Rock, approx. 270,000 cu. yd. levee embankment, mulching surf. of embankment and false berms, about 20 acres, and landside borrow excav., Lot 1 and approx. 250,000 cu. yd. levee embankment, mulching surf. of embankment and false berms, about 20 acres landside borrow exca. and constr. 3 piezometer tubes, Lot 2, Van Buren, Serial No. CIVENG-03-050-50-13.

About August 25

†Illinois—U. S. Eng., 826 U. S. Court House and Custom House, St. Louis 1, Mo., levees, Prairie du Rocher, Illinois and vicinity (Proj. Item III-A) (Edgar Lakes and Prairie du Rocher and Modoc Drainage and Levee Dist.) Randolph Co., east bank of Mississippi River, opposite approx. miles 124.5 to 126 on Mississippi River above mouth of Ohio River.

August 25

†Iowa, South Dakota and Nebraska—U. S. Eng., 1709 Jackson St., Omaha, 2, Neb., river and harbor work, McCook Lake-Upper Sioux City Bends, Woodbury Co., Ia., Union Co., S. D., and Dakota Co., Neb., approx. 7 mi. upstream from Sioux City, Ia., Serial No. CIVENG 25-065-50-6.

LOW BIDDERS

†Arizona—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., rejected bids June 28, Schedules 1 and 3, four 1,000 hp. and three 2,000 hp. synchronous motors for Wellton-Mohawk Pumping Plants 1 and 3, Gila Proj., Spec. 2675, L. B. **$283,955.** CD 7/8, under LB.

Calif., Los Angeles—Bd. Supervs., Los Angeles Co. Flood Control, Aug. 2, channel excavation and levee facing in San Gabriel River, Downey, from H. B. Adair Co., Box 249, Gardena, **$112,110.** CD 7/25.

†Iowa—U. S. Eng., 1217 U. S. Post Office and Custom House, St. Paul, Zone 1, Minn., cancelled bids to have been opened Aug. 9, Upper Approach Channel dredging, Lock and Dam 10, Mississippi River, at Guttenberg, Serial No. CIVENG 21-018-50-5. CD 7/19.

†Maine—U. S. Eng., Army Base, Boston, 10, Mass., Aug. 2, maintenance dredging, Rockland Harbor, from Bay State Dredging & Contg. Co., 62 Condor St., East Boston, Mass., **$49,200.** CD 7/26.

†Minnesota—U. S. Eng., 1217 U. S. Post Office and Custom House, St. Paul, Zone 1, Aug. 3, bank protection and Landward Lock, Lock and Dam 2, Mississippi River, from M. G. Antleford Co., 400 W. 78 St., Minneapolis, **$69,680.** CD 7/12.

●†Minn., Minneapolis—U. S. Eng., 1217 Post Office Bldg., St. Paul, rejected bids June 23, Stage 1, Lower Lock and Dam, Mississippi River, L. B. **$1,656,415.** CD 6/23, under LB.

†Missouri—U. S. Eng., 601 Davidson Bldg., 10 E. 17 St., Kansas City 8, Mo., Aug. 2, 5,390 lin. ft. revetment, adjacent to Missouri River, St. Charles Reach, approx. 29 mi. above river mouth and 1 mi. upstream from St. Charles, Serial No. CIVENG 23-024-50-8, from Hough Cowgur & Co., Inc., 320 N. 4 St., St. Louis, Zone 2, and Patton-Tulley Transportation Co., 1242 N. 2 St., Memphis, Tenn., **$203,259.** CD 7/20.

●†North Dakota—U. S. Eng., Fort Lincoln, Box 300, Bismarck, Aug. 4, intake structure, Garrison Dam Proj., Serial No. Eng. 32-915-49-94, from Peter Kiewitt Sons Co., Omaha, National Bank Bldg., Omaha, Neb., and Morrison-Knudsen Co., 319 Broadway, Boise, Idaho, **$14,937,830.** CD 7/15.

†Ohio—U. S. Eng., Madison Ave. and 8 St. W., Huntington 18, W. Va., July 28, altering Pump Stations 2, 4, 5, and 6 and equip. installation, Portsmouth-New Boston, Local Protection Proj., CIVENG-46-022-50-4, from L. P. Strandberg & Son Co., Inc., **608** S. Dearborn St., Chicago 5, Ill., **$296,263.** Est $279,741. CD 7/13.

Ohio—Ohio Conservation Div., Columbus, 505 acre headwaters lake in Knox Co. incl. dam, spillway and earthen embankments on east branch of Kokosing River, 1½ mi. north of Fredericktown, from Parkersburg Excavating Co., Parkersburg, W. Va., **$50,578.** Awarded 7/29. CD 11/3/44, under O., Columbus.

†South Dakota—U. S. Eng., 1709 Jackson St., Omaha, 2, Neb., cancelled bids to have been opened Aug. 9, furnishing intake gates for Fort Randall Dam near Lake Andes, Serial No. Eng-25-065-49-253. CD 6/10.

Tex., Freeport—City, City Hall, Aug. 2, levee sys., from McGinnes Bros., P. O. Box 2475, Houston, **$386,661.** CD 7/13.

CONTRACTS AWARDED

Miss., Pascagoula—Jackson Co., Pascagoula, seawall exten., to Guy Lewis, Gulfport, **$99,699.** Bids 7/19. CD 7/6.

Que., Sorel—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., dredging approx. 61,400 cu. yd. silt, sand and clay, to Marine Industries, Ltd., Sorel. Approx. **$62,290.** Bids 7/13.

(Continued on page 84)

Here's Why McCULLOCH Saws *start fast... and cut fast*

Conventional magneto, with coil inside flywheel, gives less spark at low speeds.

McCulloch magneto gives hotter spark at low speed. Magnetic lines of force are broken faster, because of higher rim speed at a given cranking rpm.

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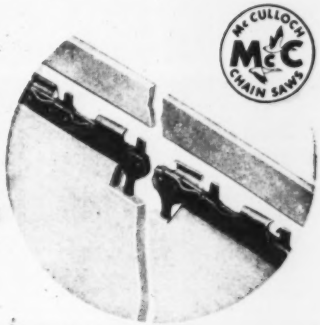
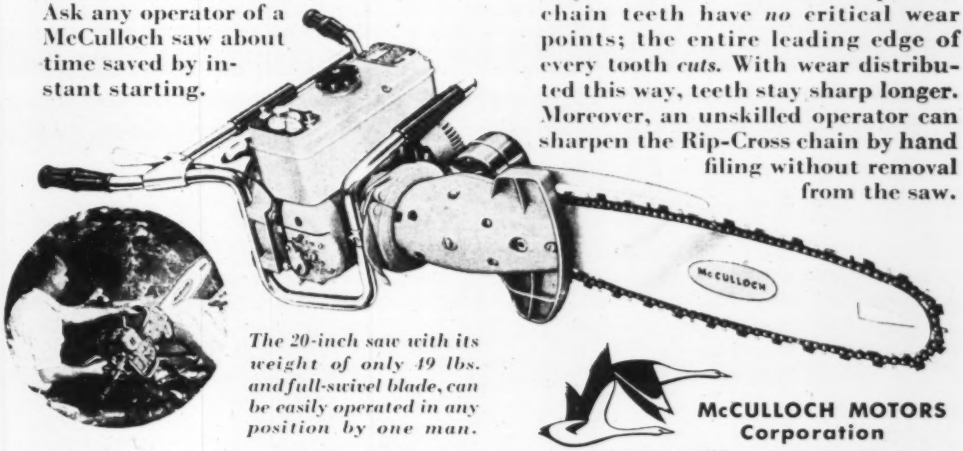


they start fast

The sketch shows how the McCulloch magneto differs from the conventional type. At any given cranking speed, magnetic lines of force are broken faster, giving a hotter spark at low speeds. The hotter spark means faster starting, in theory and in fact. Ask any operator of a McCulloch saw about time saved by instant starting.

they cut fast

The special curved teeth of the McCulloch Rip-Cross chain, driven by 5 honest hp, actually scoop out the wood—with or against the grain or at any angle, in any kind of hard or soft wood. And here's another important time-saver: the Rip-Cross chain teeth have *no* critical wear points; the entire leading edge of every tooth *cuts*. With wear distributed this way, teeth stay sharp longer. Moreover, an unskilled operator can sharpen the Rip-Cross chain by hand filing without removal from the saw.



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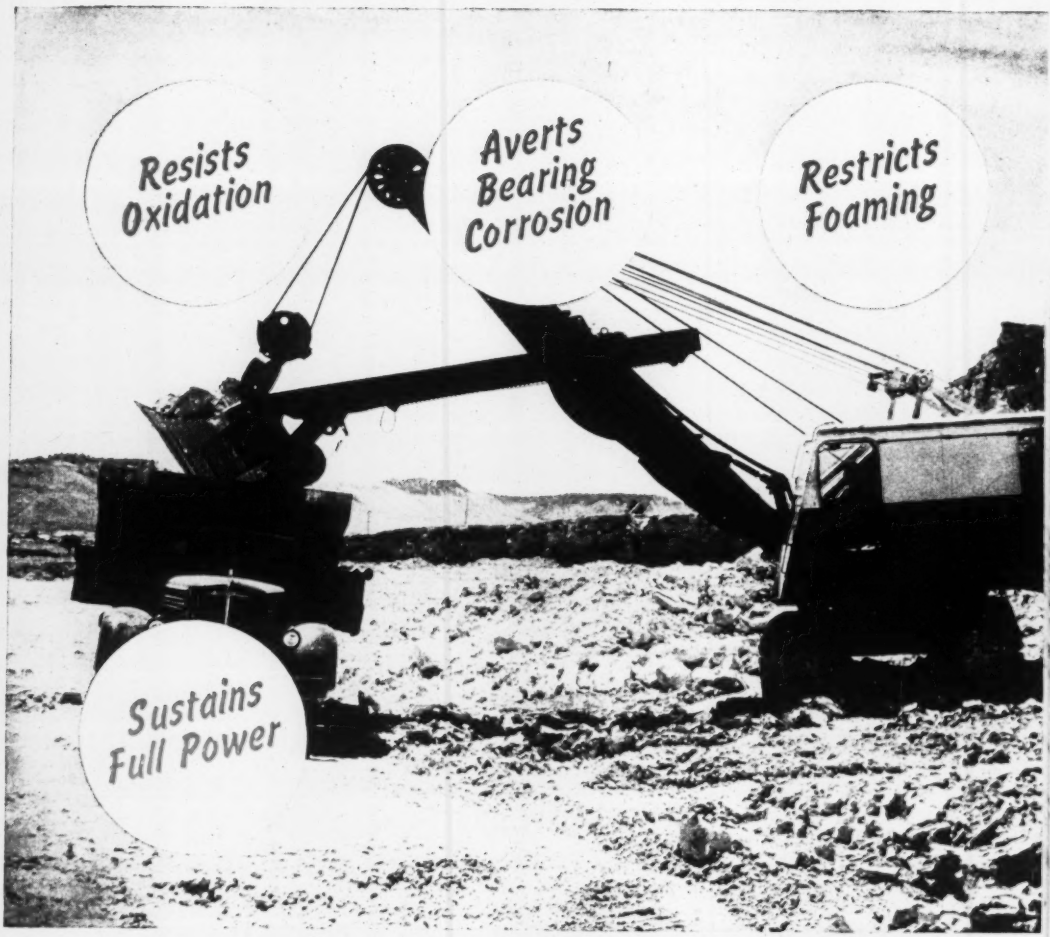

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EARLE GEARS

(Continued from page 80)

AIRPORTS AND AIRBASES

BIDS ASKED

About August 30

†**S. D., Rapid City**—WASTE TREATMENT PLANT — U. S. Eng., 1709 Jackson St., Omaha 2, Neb., cons. waste treatment plant at Rapid City Air Force Base, Spec. 25-066-50-2.

LOW BIDDERS

Ky., Owensboro — ADMINISTRATION BLDG. — Owensboro-Daviess County Airport Bd., Owensboro, rejected bids June 22, airport administration bldg. L. B. **$118,762.** CD 6/30, under LB.

CONTRACTS AWARDED

†**Calif., Hayward**—HANGAR, etc.—U. S. Eng., 743 New Montgomery St., San Francisco, hangar and central heating plant for Calif. Air National Guard, Serial No. ENG-04-203-49-161, to M & K Corp., 405 Montgomery St., San Francisco, **$611,091.** Bids 6/16, awarded 6/28. CD 6/24, under LB.

FOREIGN

Australia, Sydney—G. C. Hicks, secy., 341 Pitt St., Sydney, New South Wales, Plant Tender No. 330, supply and delivery of up to 8 concrete buckets of rated capacity at least 8 cu. yds., for Metropolitan Water Sewerage & Drainage Board.

LATIN AMERICA

Brazil, Rio de Janeiro—Secretary General, Ministry of Pub. Wks., Ave Nilo Pacanha 12, Rio de Janeiro, receiving bids September 15, levelling Santo Antonio Hill, for Republic of Brazil, Rio de Janeiro. Received no bids July 13. CD 6/17.

PUBLIC BUILDINGS

BIDS ASKED

August 22

N. J., Haddon Heights—SCHOOL—Haddon Heights Bd. Educ., Haddon Heights, school, $250,000. Hettel & Albert, 501 Cooper St., Camden, archts. CD 12/22/48.

Que., St. Hubert—HOUSING—J. J. O'Sullivan, engr., c/o Central Mortgage & Housing Corp., 1253 McGill College Ave., Montreal, 100 houses, St. Hubert Airport, (St. Hubert D. N. D. Non Urban), Proj. 1/49. Approx. $700,000. Plans deposit $10.

August 23

●†**Md., Bethesda**—CLINICAL—Federal Wks. Admin., P. Bldgs. Admin., F St. between 18 and 19 N. W., Wash. 25, D. C., Clinical Center Bldg. 10, at National Institute of Health, Proj. 18-063, $18,000,000-$20,000,000.

N. Y., New York — SCHOOL — Supt. School Buildings, Design and Construction, 49 Flatbush Ave. Extens., Brooklyn, Zone 1, general constr.; plumbing and drainage, heating and ventilating, electrical and lighting fixtures for P.S. 18, Morris Ave. and E. 149 St. Plans deposit $29, general; $8 plumbing and drainage, $10 heating and ventilating and electrical and lighting fixtures. CD 8/5/43.

August 24

Ala., Wenonah — SCHOOL — Alabama State Bd. Educ., Montgomery, trade school, $600,000. Extended date. Wilmot C. Douglas, 226 N. 14 St., Birmingham, archt. CD 7/22.

●**Mass., Boston**—HOUSING—City of Boston Housing Auth., 10 Post Office Sq., Boston, 3, 6, 10 and 13 story, bsmnt. brick Cathedral Housing, incl. 508 units, South End, Approx. $5,000,000. Plans deposit $100. H. Field Kellogg, 84 State St., archt. Thomas Worcester, Inc., 84 State St., engr. CD 7/19.

Mass., Needham — HOUSING — Town of Needham Housing Auth., 99 School St., seventy-four 1 story frame houses, Veterans Housing, Approx. $750,000; site impvt., $50,000. Plans deposit $50 each. Emery, Watt & Smith Assoc., 92 State St., Boston, archts. CD 2/10.

Minn., Fairmont—SCHOOLS—Bd. Educ., T. A. Fatcher, clk., 2 schools, $500,000. Plans deposit $25, Pass & Rockey, Mankato, archts. CD 6/17/46.

Pa., Hamburg — HOSPITAL WARDS — Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, general constr., plumbing and drainage, incl. heating and electrical for rehabilitation of hospital wards, men's bldg. and women's bldg. at State Tuberculosis Sanatorium. Plans deposit $10, general, $5 others. Willing, Sims & Talbutt, 1700 Sansom St., Phila. archts. W. B. Jefferis, c/o owner, engr. CD 2/22/46.

†**W. Va., Point Pleasant**—BUILDINGS—P. Wks. Office, Fifth Naval Dist., U. S. Naval Bse. Norfolk 11, Va., erect 10 SSAR bldgs. in multiple conversion at U. S. Naval Storehouse, Spec. 21784. Plans deposit $10. CD 5/23.

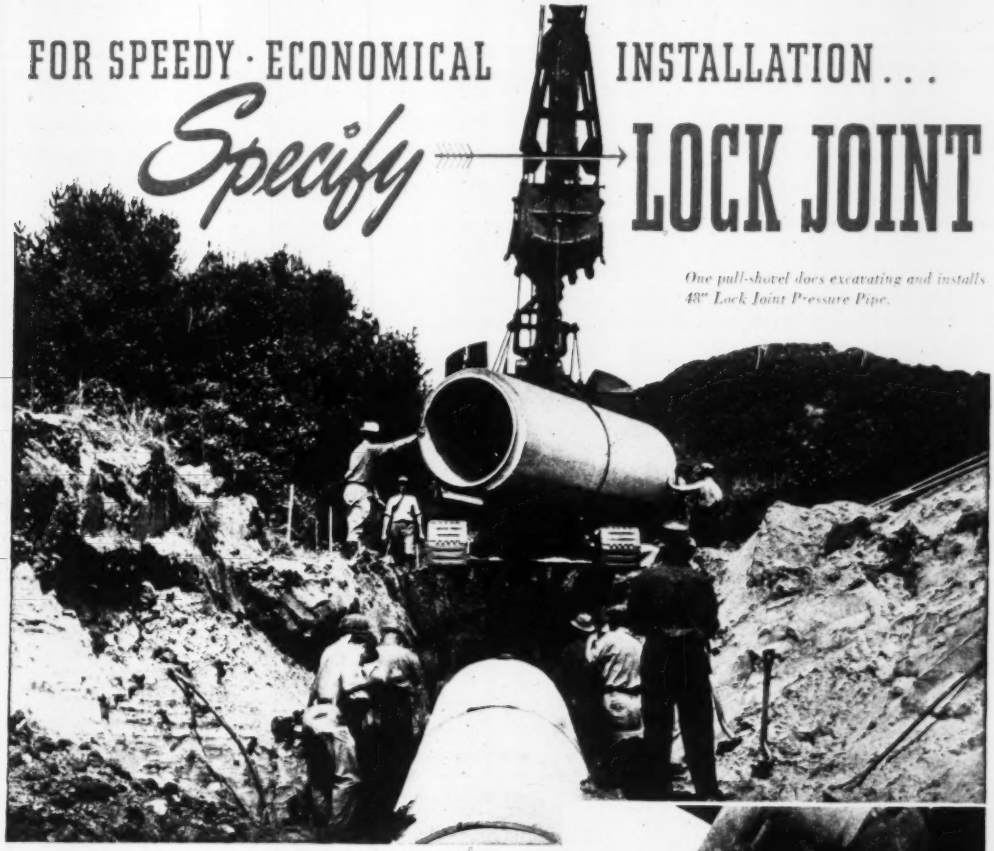
August 25

Ind., Evansville — SCHOOL — Bd. School Trustees, 7 and Vine Sts., 1 story, 316x372 ft., brick, rein.-con. steel Harper School, S. Alvord Blvd., $300,000. Plans deposit $25. Ralph Legeman, 10 Chestnut St., archt. CD 2/25.

(Continued on page 86)

FOR SPEEDY · ECONOMICAL INSTALLATION . . .

Specify LOCK JOINT



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Today, millions of feet of Lock Joint Reinforced Concrete Pressure Pipe, equipped with the Rubber and Steel Joint, installed at low cost and needing little or no maintenance, are giving unfailing service throughout the Western hemisphere.

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SCOPE OF SERVICES: Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

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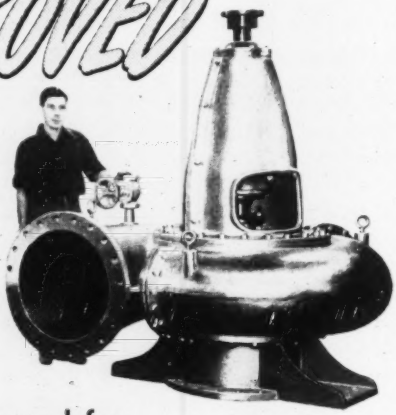

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If you're pumping solids . . . not large enough to require regular non-clog slow speed sewage pumps . . . you'll find Economy volute mixed flow pumps the answer to your problem. Engineered for greater economy in operation, the Economy mixed flow volute line, tested and proved in twenty-two years of operation, has now been redesigned for still higher efficiency.

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Centrifugal, axial and mixed flow pumps for all applications

Economy Pumps Inc.

Division of Hamilton-Thomas Corp.

Hamilton, Ohio

(Continued from page 84)

Ind., Greenfield — HOSPITAL — Greenfield Memorial Hospital Bd. Trustees, J. Ward, Fletcher, chn., Greenfield, 3 story, 42x178 ft. wing 44x85 ft. brick, stone, rein.-con. steel hospital, $800,000. Plans deposit $25. McGuire & Shook, 1409-01 Fletcher Trust Bldg., Indianapolis, archts. Jno M. Rotz Eng. Co. 804 Merchants Bank Bldg., Indianapolis, engr. CD 11/27/46.

La., Ruston — DORMITORIES — State Bd. Educ., Capitol Bldg., Baton Rouge, 2 mens dormitories, campus of Louisiana Polytechnic Institute. Plans deposit $100. Smith & Padgett, 512-14 Ouachita National Bank Bldg., Monroe, archts.

N. Y., New York — MAINTENANCE and REPAIR SHOP — Port of New York Auth., 111-8th Ave., Zone 11, automotive maintenance and repair shop, adjacent to New York Union Motor Truck Terminal, N. Y. T. 25. Plans deposit $25. CD 1/31/47, under LB.

On or About August 30

†Florida — OFFICE, etc. — U. S. Eng., P. O. Box 1169, Mobile, Zone 7, Ala., field construction office and laboratory at Jim Woodruff Dam near Chattahoochee, Serial No. CIVENG-01-076-50-2.

August 30

Ky., Wickliffe — SCHOOL — Ballard Co. Bd. Educ., County Court House, brick, concrete high school. Plans deposit $25. G. Tandy Smith, Box 708, Paducah, archt.

Miss., Cleveland — SCIENCE — State Bldg. Comm., Jackson, science bldg., Delta State Teachers College, $850,000. Plans deposit $25. Raymond Birchett, 2914 N. State St., Jackson, archt.

August 31

Tex., Seminole — SCHOOL — Bd. Educ., Seminole Independent School Dist., Seminole, masonry school, concrete slab fdn., $275,000. Buford & Feinberg, 1801 San Jacinto St., Dallas, archts. CD 3/29.

September 1

Tenn., Greenville — SCHOOL — Greene Co. Greenville, George Clem Elementary and High School for Negroes. Alfred H. Abernethy, Johnson City, archt. CD 5/19.

Va., Charlottesville — HEATING PLANT STEAM DISTRIBUTION — at office Dr. Frank H. Stafford, supt. and Medical Dir., Blue Ridge Sanatorium, Charlottesville, central heating plant and steam distr. sys. for Blue Ridge Sanatorium. Miller & Morse, Charlottesville, consult. engrs., Stainback & Scribner, Charlottesville, assoc. archts. CD 3/31/48.

†Washington — PURIFIER — Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars Ozark, one oil purifier for Grand Coulee Power Plant, Columbia Basin Proj., Spec. 2753. L. N. McClellan, ch. engr.

●Ont., Guelph — HOSPITAL — Marani & Morris, archts., 1250 Bay St., Toronto, rein.-con. hospital. Delhi St., for Guelph Hospital Comm. W. G. Carter, secy. H. H. Angus & Assoc. Ltd., 1221 Bay St., engr. Approx. $1,500,000. CD 12/13.

LOW BIDDERS

● Ark., West Memphis — HOSPITAL — Crittenden Co., West Memphis, Aug. 1, concr. hospital, Hoffman-Johnson Co., Wallace Bldg., Little Rock, $1,157,253.

Calif., Quincy — S. Hood, Plumas Co. High School Dist., Quincy, July 28, steel Quincy Junior-Senior High School gymnasium and classrooms, from Eagle Co., 158 Santa Clara Ave., Oakland, $391,000. CD 7/18.

Calif., Riverside — COLLEGE — Riverside City School Dept., 4746 Park St., Aug. 1, 2 story, 76,000 sq. ft. rein.-con., Riverside College addn., from Frank Pinkerton, 632 W. Grand Ave., Corona, $372,000. CD 7/15.

Conn., Bristol — SCHOOL — City Bd. of Education and Schools, Aug. 1, school, Farm-

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BOSTON • CINCINNATI • NEW ORLEANS

lington Ave. Sect., Louisiana Ave., from Bonviemi Bldg. Co., Torrington, **$564,500.** CD 7/12.

•Fla., Green Cove Springs—COMPRESSED AIR PLANT—At Office Capt. J. D. Wilson, Officer in Charge Constr., Box 365, Naval Base, Charleston, S. C., 36x73 ft., steel, concrete, masonry compressed air plant and distr. sys., NOY 18356, Spec. 2169, from Means Constr. Co., 945 Phillips St., Jacksonville, **$297,000.** CD 7/7.

Ga., Athens—HOSPITAL—Clarke Co., Athens, Aug. 3, hospital addn., from G. McCaskey & Son, Athens, **$479,397.** CD 7/15.

Ga., Atlanta—SCHOOL—Fulton Co. Bd. Educ., Courthouse, Aug. 2, Southwest Fulton High School, from Tri-State Constr. Co., 114 Ellis St. N. E., **$378,000.** CD 7/13.

Ia., Ames—POWER PLANT—City, City Hall, July 25, power wiring, Contr. 19, power plant improvs., from Commonwealth Electric Co., 1901 Y St., Lincoln, Neb., **$78,150.** CD 6/29.

Ky., Frankfort—OFFICE—State Property & Bldgs., Frankfort, Aug. 4, capitol annex bldg., from George H. Rommell Co., Inc., 958 Logan St., Louisville, **$787,000.** CD 7/12.

•Md., Cheverly—HOSPITAL—Bd. Comrs. Prince George Co., Cheverly, addn. to Prince Georges County General Hospital, from R. & J. Constr. Co., 3432 Connecticut Ave. N.W., Wash., D. C., **$1,101,597.** CD 2/25.

Mass., Cambridge—HOUSING—City of Cambridge Housing Auth., 1416 Massachusetts Ave., Aug. 2, 66 unit veterans housing Proj. 200-2, Walden St., from G. L. Rogo & Sons, Inc., 80 Boylston St., Boston, **$717,000.** CD 7/4.

Mass., Lowell—NURSES HOME—Lowell General Hospital, Lowell, Aug. 2, nurses home, from Volpe Constr. Co., 54 Eastern Ave., Malden, **$641,240.** CD 7/12.

•Minn., St. Paul—HIPPODROME—Minnesota State Agricultural Society, R. Lee, secy., State Fair Grounds, cancelled bid to have been opened July 14 hippodrome bldg., **$1,209,000.** CD 5/25.

Minn., Shakopee—SCHOOL—Bd. Educ. Mrs. M. L. Reiland, clk., rejected bids June 15, 3 story, L shaped, 100x197 ft. and 42x88 ft. school addn., L. B. **$289,913.** CD 6/21, under LB.

•Nev., Reno—SCHOOL—Reno School Dist. 10, 170 W. 8 St., Aug. 1, 1 and 2 story, rein.-con. high school, from Nielsen Constr. Co., Box 542, Stockton, Calif., **$2,458,632.** CD 6/28.

•N. C., Burlington—SCHOOL—The Burlington Administrative School Unit, L. E. Spikes, supt., Aug. 3, general contract high school, from R. H. Pinnix, Gastonia, **$1,338,900** lowest bid. CD 6/30.

•Okla., Fort Sill—FAMILY QUARTERS—U. S. Eng., P. O. Box 61, Tulsa, Zone 2, rejected bids, June 16, Family Quarters Facilities D. Eng. 34-066-49-118, Ltr. B **$633,222** Prop. 1, **$737,-772** Prop. 2, **$538,609** Prop. 3. CD 6/17, under LB.

Tenn., Martin—AGRICULTURAL—University of Tennessee Junior College, Martin, agricultural bldg., from Seth E. Geim & Co., Martin, **$619,749.** Hart & McBryde, Cotton States Bldg., Nashville, archts. CD 1/17/47.

Tex., Stephenville—SCIENCE—John Tarlton College, Stephenville, cancelled bids to have been opened Sept. 2, 3 story science bldg., Approx. **$250,000.** CD 8/5.

Va., Lynchburg—SCHOOL—City, July 28, William Marvin Bass School, from English Constr. Co., Altavista, **$581,740.** Stanhope S. Johnson, Allied Arts Bldg., archt. CD 5/16/45.

CONTRACTS AWARDED

•Calif., Berkeley—SCHOOL—Berkeley Bd. Educ., 1414 Walnut St., complete Berkeley High School Auditorium, to Pinwaddie Constr. Co., 570 Crocker Bldg., San Francisco, **$1,-061,500.** Bids 8/8, CD 6/28.

•Calif., Comuton—WAREHOUSE, etc.—U. S. Eng., 751 S. Figueroa St., Los Angeles, warehouse, motor service shop, etc., Calif. National Guard, Serial No. 49-043-Prof.-50, to Eschrich Bros., Inc., 645 South Avenue 21, Los Angeles, **$127,080.** Bids 6/23, awarded 6/28. CD 6/30, under LB.

Calif., Oakland—SCHOOL—Bd. Educ., 1025 2 Ave., 2 story, 100x260 ft. high sch., Joseph C. Laney Trade & Technically Institute, to Louis C. Dunn Co., 799 Monadnock Bldg., San Francisco, **$981,813.** Bids 7/26, CD 8/2, under LB.

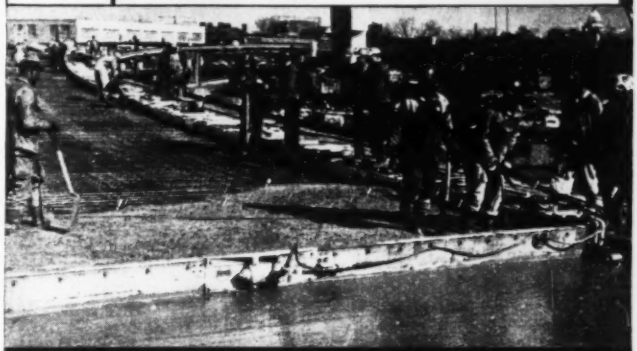
Calif., San Bruno—SCHOOL—San Mateo Union High School Dist., Bellevue and Delaware Sts., San Mateo, rein.-con., structural steel Carmelhine High School, Unit 2, to Frank C. Bonelli Co., 265 Clementina St., San Francisco, **$676,560.** Bids 8/3, CD 7/19.

•Colo., Pueblo—HOSPITAL—Colorado State Hospital, c/o Dr. F. H. Zimmerman, State Hospital, Pueblo, general contract 6 story, 80x350 ft. rein.-con. face brick, 360 semi-patient hospital and 4 story rein.-con. face brick 300 female patient hospital, to Mead & Mount Constr. Co., 1220 Denver National Bank Bldg., Denver, **$2,044,000.** Bids 7/28, awarded 8/2, CD 8/5, under LB.

Mass., Lowell—NURSES HOME—Lowell General Hospital, 295 Varnum Ave., W. G. Spence, pres., Lowell, nurses home, to Volpe Constr. Co., 54 Eastern Ave., Malden, **$645,-740.** Bids 8/2, awarded 8/5. CD 8/8.

Miss., State College—GYMNASIUM—State Bldg. Comm., New Capitol Bldg., Jackson, gymnasium at Mississippi State College, to L. B.

FOR Bridge Decks Municipal Paving Highway Widening



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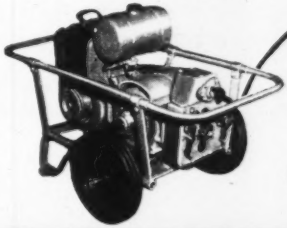

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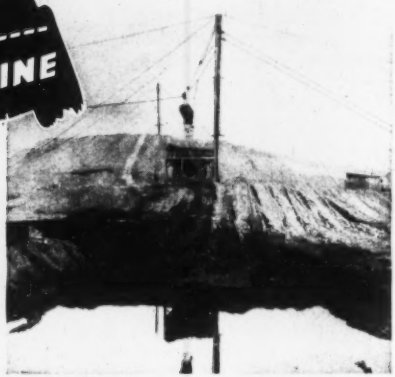

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Priester & Son, 1403 12 Ave., Meridian, **$298,000.** Bids 7/27. CD 7/11.

●†**N. M., Albuquerque**—MACHINE SHOP—U. S. Engr., Box 1538, two 2 story bldgs., incl. machine shop and industrial type bldg., A 23B and A 23 C, to R. J. Daum Constr. Co., Albuquerque, **$1,209,000.** Est. $500,000. Bids 6/15. CD 6/21.

New York—BUS GARAGE—Bd. Transportation, 250 Hudson St., New York, Zone 1, general contract Castleton Avenue Bus Garage, Castleton and Jewett Aves., to Atlas Tile & Marble Works, 238 E. 26 St., New York, Zone 16, **$673,909.** Bids 6/13. CD 6/23, under LB.

●**N. Y., Bayside**—SCHOOL—Supt. School Buildings, Design & Construction, 49 Flatbush Ave. exten., Brooklyn, Zone 1, general contract P. S. 46, 67 Ave. from 218 to 212 Sts., to John T. Brady & Co., 606 W. 47 St., New York, Zone 19, **$1,000,017.** Bids 7/14. CD 7/18, under LB.

●**N. Y., Brooklyn**—HOUSES—New York City Housing Auth., 63 Park Row, New York, Zone 7, general contract Sect. 1, consisting Bldgs. 4 to 10 (inclusive) of Farrgut Houses, Proj. No. NYS-29 in area bounded by Sands, Bridge, York and Navy Sts., to John A. Johnson & Sons, Inc., 270 41 St., Zone 32, **$5,126,000***** heating and ventilating, to Dierks Heating Co., 43-32 33 St., Long Island City, **$544,444***** plumbing, to J. L. Murphy, Inc., 340 E. 44 St., New York, Zone 17, **$611,000.** Grand total $6,282,444. Bids 7/11. CD 7/13, under LB.

N. Y., East Hempstead—SCHOOL—Bd. Educ., Union Free School Dist. 2, School 4 between Goodrich and Walnut Sts., to J. Alexander Stein, Inc., 103 E. 125 St., New York, Zone 35, **$632,000.** Bids 7/18. CD 6/30.

N. Y., Mohawk—HIGH SCHOOL—Bd. Educ., Central School Dist. 1, high school addn., to Mancuso Bros., Utica, **$722,350.** Bids 7/27. CD 7/22.

N. Y., Mount Vernon—SCHOOL—Bd. Educ., 4 Ave. and E. 4 St., school, to Blanco & Pepe, Inc., 7 S. Third Ave., Mt. Vernon, **$499,334.** Bids 7/21. CD 6/22.

●**N. Y., New York**—HOUSES—New York City Housing Auth., 63 Park Row, Zone 7, general contract Marble Hill Houses, Proj. No. NYC-15 bounded by Exterior and W. 225 Sts., Broadway, W. 228 St., Marble Hill Ave. and W. 230 St., to Caldwell Wingate Co., 101 Park Ave., Zone 17, **$7,747,000***** heating and ventilating, to Harry Starkman & Bros., 348 Brook Ave., Zone 54, **$861,000***** plumbing, to Jacobs Bros., 306 E. 45 St., Zone 17, **$1,019,000.** Grand total $9,630,000. Bids 6/28. CD 6/30, under LB.

Okla., Lawton—HOSPITAL—Comanche Co., Lawton, Comanche Co. Memorial Hospital, to J. J. Bolinger Constr. Co., Braniff Bldg., Oklahoma City, **$673,200.** Bids 7/21, awarded 8/2. CD 7/29, under LB.

●**Pa., Bradford**—HOSPITAL—Bradford Hospital Assoc., Bradford, irregular dimensions, brick & steel hospital, to Ertel Constr. Co., 5 and Market Sts., Camden, N. J., **$1,489,777.** Bids 6/1. CD 6/16, under LB.

Pa., Harrisburg—BUILDING—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, general contract female disturbed patients bldg., Harrisburg State Hospital, to S. H. Evert Co., Inc., Danville Rd., Bloomsburg, **$566,163.** Bids 7/27, awarded 8/5. CD 8/1, under LB.

Tenn., Memphis—SCHOOL—Shelby Co. Bd. Educ., Courthouse, Douglas School, to Lee Constr. Co., 166 Monroe Ave., **$342,539.** Bids 7/29. CD 4/26.

●**Tenn., Memphis**—PATHOLOGY—University of Tennessee, 874 Union Ave., general contract Institute of Pathology, to Foster & Creighton, 1352 Madison Ave., **$1,039,800.** Bids 7/26, awarded 8/6. CD 8/4, under LB.

Tex., Denton—SCIENCE—North Texas State Teachers College Denton, 3 story, bsmt., attic science bldg. to Henry C. Bennett, 1315 Cadiz St., Dallas, **$760,909.** Bids 7/29. CD 8/5, under LB.

●†**Alaska, Anchorage**—HOSPITAL—Alaska Native Service, Bureau, hospital, to J. C. Boespflug Constr. Co., Peter Kiewit Sons Co. and Morrison-Knudsen Co., 1912 4 Ave. S., Seattle, Wash., **$4,612,354.** Bids 4/26. CD 5/2, under LB.

N. S., Halifax—SCHOOL—School Bd., Halifax, Westmount School, to George E. Zinck Ltd., 411 Young St., Approx. **$315,519.** Bids 8/1. CD 7/15.

Que., Farnham—LOCKER and STORAGE PLANT—Co-operative, of Farnham, City Hall, 2 story, part bsmt., 115x212 ft., concrete, steel locker and storage plant, to Paul Boucher, Henryville. Approx. **$100,000.** M. Hudon, c/o owner, engr.

Que., St. Maxine—SUB STATION—Quebec Hydro Electric Power Comn., 107 Craig St. W., Montreal, power sub station, to Collet Freres, Ltd., 1878 Northeasts St., Montreal, Approx. **$300,000.** R. Walker, c/o owner, engr.

COMMERCIAL BUILDINGS

BIDS ASKED

August 26

Ky., Bardstown—HOSPITAL—Nazareth Literary & Benevolent Society, Nazareth, Flaget Memorial Hospital. Plans deposit $25. Thomas J. Nolan, 311 Ky. Home Life Bldg., Louisville, archt.

O., Newark—CHURCH—Central Church of Christ, Rev. John C. Udergraff, pastor. New-

(Continued on page 93)

Boosting PLANT Capacity with Gyratory Crushers

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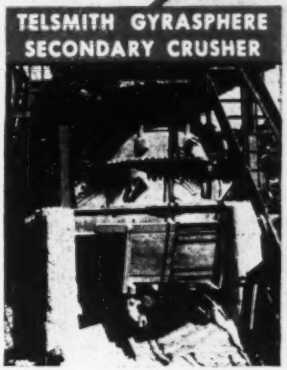
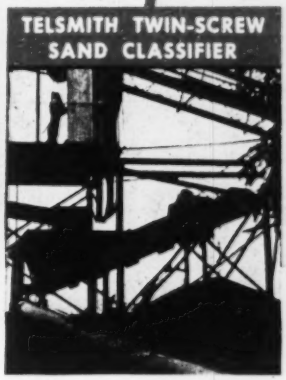


TELSMITH TWIN-SCREW SAND CLASSIFIER



TELSMITH

THE PALMER CRUSHING CO., SLINGER, WIS.—a top producer in the Milwaukee area—installed Telsmith gyratory crushers to boost plant capacity. A typical glacial moraine deposit with a high percentage of very hard boulders—their pit runs about 65% gravel and 35% sand. A large percentage has to be crushed. The plant, when first built, used a Telsmith 13-B Gyratory as the primary and a double roll crusher as the secondary. Replacing the roll crusher with a Telsmith 36 Standard Gyrasphere Secondary Crusher *upped capacity* 40 to 50%. Now the plant turns out about 225 tons hourly of aggregate, for concrete or for railroad ballast. Two Telsmiths do all the crushing—turn out well-cubed products—and still have plenty of crushing capacity in reserve. A Telsmith Sand Classifier, with 20" x 15' twin screws, recovers all sand. In this plant it was Telsmith Equipment *again* for Mr. Palmer. The reason—Telsmith big capacity and better performance in his two other plants. Get Bulletin G-2.

G-17

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BE READY FOR THE WORST WEATHER with the best

CHOOSE THE SNOW PLOW TO FIT THE JOB FROM THIS COMPLETE LINE

A-C MOTOR GRADERS with Baker "V" Plows

MODEL	BRAKE HP.	ENGINE
AD-4	104	2-Cycle Diesel
AD-3	78	2-Cycle Diesel
BD-3	78	2-Cycle Diesel
BD-2	50.5	2-Cycle Diesel
D	34.7	Gasoline
W-Speed Patrol	31.5	Gasoline

(Wings available for AD and BD models . . . scarifiers for all models, except W-Speed Patrol, for removing ice. Blade plow also built for W-Speed Patrol . . . and snow bucket for Model D.)

A-C CRAWLER TRACTORS with Baker "V" Plows and Wings

MODEL	DRAWBAR HP.	ENGINE
HD-10	86.63	2-Cycle Diesel
HD-7	60.10	2-Cycle Diesel
HD-5B	40.26	2-Cycle Diesel

(Also: Tracto-Shovel "V" plow and Snow Loader Bucket for HD-5G)

A-C WHEEL TRACTOR with Baker "V" or Blade Plow

MODEL	DRAWBAR HP.	ENGINE
IB	13.5	Gasoline

FOR OPENING HIGHWAYS . . .

. . . it's heavy-duty, diesel-powered Allis-Chalmers Motor Graders and Crawler Tractors with Baker snow plows. A right size to fit your conditions—but not one-job machines. Each model handles light or heavy plowing efficiently and economically. Provide instant starting and operation on diesel fuel! Exclusive tubular frame on A-C Motor Graders absorbs the shocks and strains that come from bucking heavy drifts. Tandem chain drive and proper weight distribution gives you the traction to keep moving through toughest going.

Also available—Baker snow plow for the new, low-cost Allis-Chalmers Model D Motor Grader with exclusive tandem drive. Gasoline powered, for light to average work . . . a money-saver on many jobs.

equipment

You can depend on AC's to handle toughest snow removal at lowest cost— all through the winter

FOR LOADING OR PLOWING SNOW . . .

. . . it's the Allis-Chalmers HD-5 2-Cycle Diesel Tractor with a Tracto-Shovel light materials bucket or V-plow—both are interchangeable. Ideal for cleaning up streets, alleys, gasoline stations, parking lots . . . working around buildings, industrial plants, cemeteries, many other places. This same outfit, with other interchangeable attachments—dirt and rock buckets, bulldozer blades—handles all types of excavating and leveling . . . earns an income for contractors the year around . . . stretches city and highway budgets.

FOR CLEARING WALKS, DRIVEWAYS, PARKING AREAS . . .

. . . it's the Allis-Chalmers Model IB Industrial Wheel Tractor with broom or snow plow—"V" or blade type. Has mounting frame for quickly attaching or removing auxiliary equipment. Compact, fast, low center of gravity, short-turning radius, gasoline powered. Handles all kinds of jobs all year, at big savings.

ALL-AROUND PLOW

You can plow the toughest as well as the lightest drifts with this 17,000 lb., Allis-Chalmers HD-5 Tractor and V-plow attachment for the Tracto-Shovel. Has hydraulic tilt to break through any going. Crawlers work where rubber-tired equipment can't penetrate.

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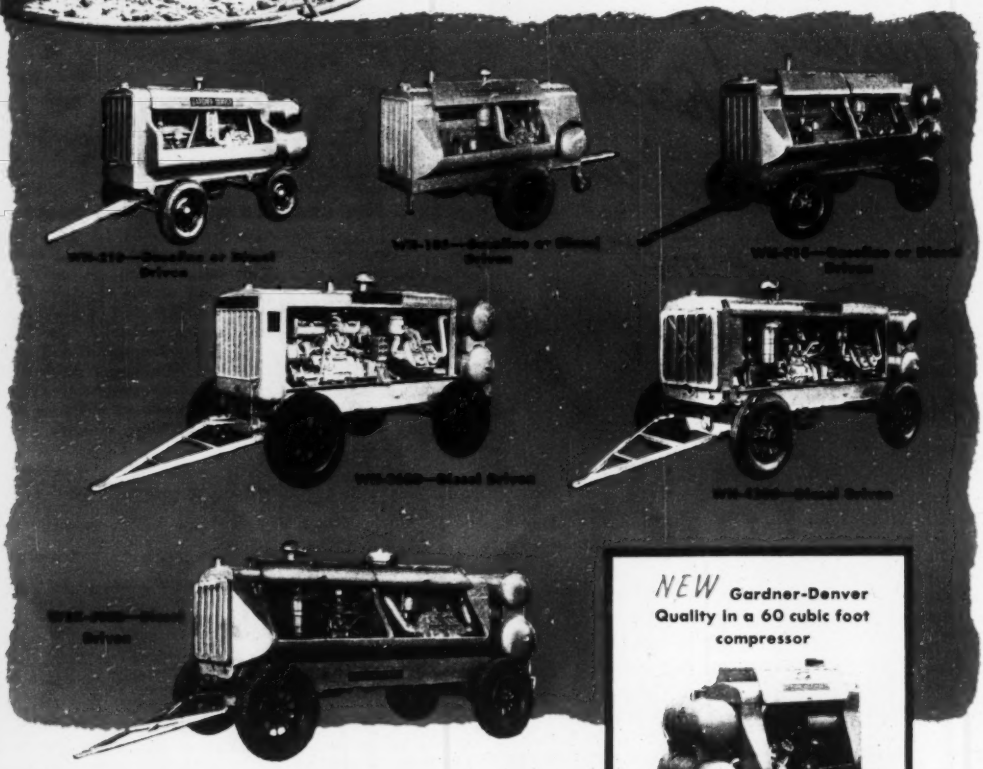

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ADO-60—Utility Portable Air Compressor

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(Continued from page 88)

ark, church, Mt. Vernon Rd. and Rugg Ave. $275,000. CD 2/20/47.

●**Pa., Bedford**—HOSPITAL—Bedford County Memorial Hospital, Bedford, 3 story, irregular, brick, steel hospital, steel joint floor and roof constr. $1,000,000. Plans deposit $25. James Ritchie & Sons, 38 Newbury St., Boston, Mass., archts. CD 11/29.

September 2

O., Toledo—HOSPITAL—Robinwood Hospital, Wm. Pioch, chn. Bldg. Comn., 2517 Robinwood St., 4 story hospital addn. $500,000. Bellman, Gillett & Richards, 518 Jefferson St., archts. CD 3/28.

September 7

Kan., Hutchinson—HOSPITAL—Grace Hospital, Hutchinson, hospital addn. $500,000. McCracken & Hiett, Hutchinson, archts. CD 8/5.

October 1

Ill., Glenview—SUPER MARKET—Cain & Culhaine, 1345 N. Broadway, Chicago, Zone 13, 100x400 ft. steel, stone super market, Glenview and Waukegan Rd. $300,000. Clarence L. Dahlquist & Assoc., 430 N. Michigan St., Chicago, Zone 11, archts.

●**Pa., Radnor**—APARTMENT DEVELOPMENT — Broadlawn Bank, 2307 N. Broad St., Phila., apartment development, Conestoga Rd. $2,000,000. H. Stanley Atkinson, 1048 S. Ithon St., Phila., archt.

October 25

●**Tenn., Nashville**—OFFICE and SERVICE CENTER—Nashville Electric Service, 605 Church St., office and service center. Approx. $1,000,000. Stone & Webster, 49 Federal St., Boston, Mass., engrs. and archts. CD 6/9.

Bids Asked

Ill., Chicago—CHURCH — Faith United Church of Christ, 5805 Throop St., 1 story, bsmnt., brick church, $400,000. A. Swanson & Assoc., 112 E. Chestnut St., archts.

Tex., Alpine—AUDITORIUM — Paisano Baptist Encampment, c/o S. E. Sweatingen, Marfa, 2,000 seat auditorium. Approx. $250,000. Bids 7/30 rejected. Will N. Noonan, 720 Travis Bldg., San Antonio, archt. CD 6/7

SOON LETS CONTRACT

Conn., Putnam—EXCHANGE—Carl J. Malmfeldt & Assoc., 36 Pearl St., Hartford, soon lets contract 2 story, brick, stone, concrete exchange bldg., dial equip., Main St., for Southern New England Telephone Co., 227 Church St., New Haven. $250,000. CD 7/26.

Ill., Chicago—CHURCH — Faith United Church of Christ, 92 and Justine Sts., Zone 20, soon lets contract 1 story, bsmnt., 110x200 ft., concrete, brick church. $400,000. Arthur Swanson & Assoc., 112 E. Chestnut St., Zone 11, archts. CD 8/8.

Ill., Chicago—SCHOOL—Weber High School, 3636 W. Wolfram St., soon lets contract 2 story, brick, steel, concrete school. McGaughey & Assoc., Prospect Ave., Park Ridge, archts. CD 10/18/46.

N. J., Camden—SYNAGOGUE—Mair Samuels, archt., 1225 Langham Ave., soon lets contract synagogue, for Congregation Sons of Israel, S. and Sycamore Sts. $250,000.

N. J., Trenton—SCHOOL—Holy Angels Roman Catholic Church, 1715 S. Broad St., soon lets contract school. $275,000. Henry Hoch, 63 Schuremon St., Wilmington, Del., archt.

N. J., Trenton—CHURCH—St. Anthony's Roman Catholic Church, 626 S. Olden Ave., soon lets contract church. $500,000. John Harmon Harvey, 12 N. Warren St., archt. CD 7/26.

Pa., Phila.—HEALTH CENTER—Louis Magazaner, archt., 1701 Walnut St., soon lets contract health center for Mens Apparel Industry, Joint Bd. of Amalgamated Clothing Workers of America, 2715 South St. $700,000.

Pa., Phila.—BUILDING—United Engineers & Constructors, Inc., engr., 1401 Arch St., soon lets contract bldg. alterations Operation No. 2, for Girard Trust Co., 1409 S. Penn Square. $500,000. Zantzinger & Borie, 1531 Locust St., archts.

LOW BIDDERS

Fla., Tampa—HOSPITAL—St. Joseph's Hospital, Inc., c/o W. B. Harvard, archt., Alhambra Arcade, rejected bids May 2, hospital addn., L. B. approx. $350,000. CD 5/11, under Lib.

Pa., Phila.—CHURCH, etc.—Good Shepherd Roman Catholic Church, 67 St. and Chester Ave., rejected bids church and rectory. Over $250,000. CD 7/19.

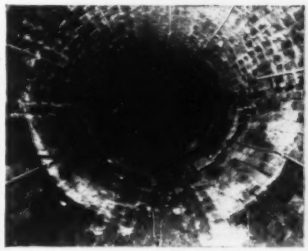
Tex., Fort Worth—DIAL—Southwestern Bell Telephone Co., 308 S. Akard St., Dallas, 2 story, bsmnt., dial telephone bldg., from J. O. Hall Constr. Co., 2431 Pittman St., Dallas. $259,000. CD 7/26.

Tex., Plainview—EDUCATIONAL — First Baptist Church, Plainview, 4 story, 38,300 sq. ft. brick, steel, concrete frame and fdn., educational bldg. from Dolph Constr. Co., 3901 Elm St., Dallas. $359,000. Est. $350,000. CD 6/27.

CONTRACTS AWARDED

Calif., Long Beach—OFFICE—Associated Telephone Co., 1214 7 St., Santa Monica, 2 story, 60,000 sq. ft., rein.-con., telephone office, to George W. Carter Co., 1721 W. Olympic St., Los Angeles. Approx. $400,000. Albert C. Martin & Assoc., 333 S. Beaudry St., Los Angeles, archts.

"GUNITE" RENEWS OLD BRICK SEWERS



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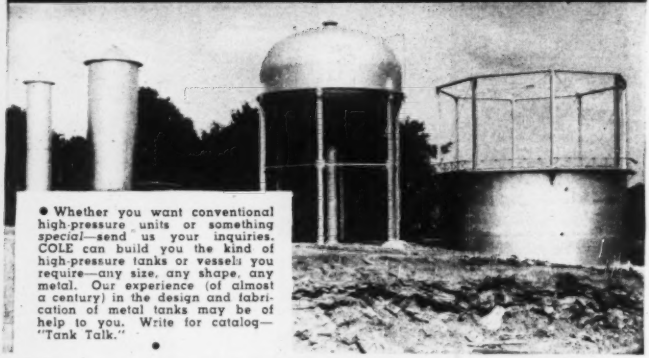

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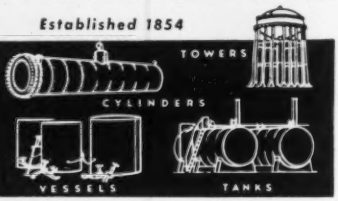

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●**Calif., Los Angeles**—DWELLINGS—Silverado Manor, 6305 Orange Ave., Long Beach, 210 frame, stucco dwellings between 135 St. and 139 St., Main St. to San Pedro St. Owner builds. **$1,000,000.** Southwest Drafting Service, 2724 Florence Ave., archt.

●**Calif., Norwalk**—DWELLINGS, etc.—Sydmar Homes, Inc., 6305 Orange St., Long Beach, 120 frame, stucco dwellings, garages on scattered lots. Owner builds. **$739,400.** Paul Duncan, 31823 Laurel Canyon Blvd., Los Angeles, archt.

Del., Claymont—RESIDENTIAL DEVELOPMENT—Brandywine Construction Co., No. 6 Mt. Vernon Dr., residential development, Polling Park, separate contracts. **$250,000.**

Del., New Castle—RESIDENTIAL DEVELOPMENT—Basin Road Construction Co., Wilmington Manor, residential development Basin Rd., etc., separate contracts. **$250,000.**

Del., New Castle—RESIDENTIAL DEVELOPMENT—Garden Park Homes, Wilmington Manor, Wilmington, residential development, Wilmington Manor Gardens, separate contracts. **$500,000.**

●**Fla., Hialeah**—HOMES—S. F. Danels, 944 E. 25 St., 200 homes in Widener Village. Owner builds. Over **$1,000,000.**

Fla., Pensacola—RESIDENTIAL DEVELOPMENT—Vista Del Mar Properties c/o M. A. Tolbert, Jr., Pensacola, residential development. Owner builds, approx. **$300,000.**

Fla., Tampa — HOMES — Peter Koplinski, 109 E. Frances St., 100 homes. Owner builds. Approx. **$500,000.** CD 7/11.

Ill., Chicago — RESTAURANT — Berghoff Restaurant, 19 W. Adams St., Zone 3, 4 story bldg. and modernizing 2 stories and bsmnt. restaurant, to G. C. Krahl Constr. Co., 350 N. Clark St., Zone 10. Est. **$250,000.** Awarded 7/27. CD 6/22.

Ill., Chicago—SCHOOL—St. Anne & St. Joseph Parish, c/o Thomas Edward Cooke, archt., 228 N. LaSalle St., general contract 3 story, 114x159 ft. brick, steel, concrete school addn., to Henry Bros., 228 N. LaSalle St. CD 6/28.

Ill., Chicago—SCHOOL and CONVENT—St. Mary Star of the Sea Parish, 6410 S. Kilbourn St., Zone 29, 2 story, bsmnt., 57x148 ft. steel, brick school, 2 story, bsmnt., 38x87 ft. steel, brick convent, to Klinge & Hartney, Inc., 1242 Harvey St., Berwyn. **$340,000.** Awarded 8/3. CD 7/14.

Ind., Dyer—HOSPITAL—Mt. Mercy Sanitarium, Lincoln Hy., 2 story, bsmnt., 100x150 ft., brick, steel sanitarium, to James McHugh Constr. Co., 6449 S. Park Ave., Chicago Zone 37, Ill. **$650,000.** Awarded 8/3. CD 7/1.

Ia., Grinnell — DORMITORY — Trustees of Iowa College, Grinnell College, Grinnell, 3 story, bsmnt., 185x438 ft., rein.-con. brick, steel, stone Younker Hall Men's Dormitory, to Weitz Constr. Co., Felmine Bldg., Des Moines. Approx. **$500,000.** CD 4/26.

Kan., Wichita—HOUSING—Golden Constr. Co., A. C. Golden, pres., 1202 S. Grove St., Wichita, 60 houses. Owner builds. **$400,000.**

●**Ky., Fort Thomas** — HOUSING — Theodore Dress, Licking Pike, Newport, one hundred 1½ story, bsmnt., brick, stone, concrete houses, near Grant Ave., separate contracts. **$1,500,000.**

●**Ky., Louisville** — DORMITORY — Southern Baptist Theological Seminary, 2800 Lexington Rd., 2 and 3 story, 225x250 ft., brick, steel concrete-family unit dormitory, incl. 110 units, to F. W. Owen Co., 119 N. 5 St. **$1,000,000.** Awarded 8/6. CD 1/17.

La., New Orleans — HOUSING — Rudolph Schulze, Canal Bldg. 38 homes. Owner builds. Approx. **$250,000.**

Mass., Boston—HOSPITAL—Massachusetts Eye & Ear Infirmary, 243 Charles St., hospital addns., alterations, to Sawyer Constr. Co., 31 James Ave., **$520,950.** Est. **$500,000.** Bids 7/29, awarded 8/1. CD 7/28, under LR.

●**Minn., Minneapolis** — HOUSING — Garden Village Apartment Co., c/o Liebenberg & Kaplan, archts., 51 S. 13 St., general contract housing group, Salem Ave. between Minnetonka Blvd. and Hy. 7, to Car-Bell, 51 S. 13 St., **$1,200,000.**

Miss., Biloxi—HOUSING—Sta-Mar Homes, Inc., G. A. Marshall, constr. engr., 60 homes, owner builds. Approx. **$300,000.**

Mo., Affton (St. Louis, Zone 23, P. O.)—HOUSING—Risch Bldg. & Real Estate, 9160 Gravois Ave., Affton, St. Louis, Zone 23, seventy-two 1 story, 24x36 ft., concrete housing, Mackenzie Park No. 2, Sect. B, own forces. Approx. **$360,000.**

Mo., St. Louis—BUILDING—Salvation Army, c/o Div. Headquarters, Fullerton Bldg., 122 N. 7 St., Zone 1, 1 story, 49-93 ft. and 34x46 ft. L-shaped brick, rein.-con. bldg., incl. shops, kitchen, recreation center, classrooms, auditorium etc., Lafayette Park Center, at Dolman and Carroll Sts., Elam Constr. Co., 6421 Hampton Ave., Zone 9. Bids 7/21. CD 7/13.

Mo., St. Louis—BUILDING—F. W. Woolworth Co., 3663 Lindell Blvd., St. Louis, Zone 8, 1 story, brick, rein.-con., steel top addn. to store bldg., Grand Blvd. and Olive St., to Murch-Jarvis Co., Inc., 718 Locust St., Zone 1. Approx. **$750,000.** W. J. Knight & Co., Missouri Insurance Bldg., 705 Chestnut St., Zone 1, engr.

Neb., Omaha—APARTMENT—Cox Avenue Apartments Co., 2336 Jone St., apartment. Owner builds. **$950,000.** M. J. Lahr, 34 Country Club, Ralston, archt.

N. J., Hammonton—RESIDENTIAL DEVELOPMENT—Packard Manor Homes, 108 Bellvue Ave., residential development, Pratt St., etc., separate contracts. **$250,000.**

N. J., Long Beach—RESIDENTIAL DEVELOPMENT—Long Beach Land Co., Long Beach, residential development, Ohio Ave. and Dune Lane, separate contracts. **$250,000.**

●**N. J., Newark**—APARTMENT—Forest Hills Terrace Apartments, c/o Erwin Gerber, archt., 1180 Raymond Blvd., 144 unit garden apartment, Grafton and Montclair Aves., Owner builds. **$1,200,000.**

●**N. J., Plainfield** — APARTMENT — G & G Constr. Co., c/o Erwin Gerber, archt., 1180 Raymond Blvd., Newark, 256 unit garden apartment, E. Front St. and Leland Ave. Owner builds. **$2,000,000.**

N. Y., Bayshore — HOSPITAL — Southside Hospital, Montauk Hy., general contract 1 and 3 story hospital addn., Main St. and 4 Ave., to Fred T. Ley & Co., Inc., 30 E. 42 St., New York, Zone 1. Approx. **$700,000.** Bids 6/10 CD 6/15, under LB.

●**N. Y., New York**—BANK, etc.—Irving Trust Co., 1 Wall St., Zone 5, 6 story, 72x100 ft. bank and office bldg., to Turner Constr. Co., 420 Lexington Ave., Zone 17. Est. **$1,000,000.** CD 4/27.

N. Y., New York—NURSES RESIDENCE—St. Clare's Hospital, 415 W. 52 St., Zone 19, nurses residence and training school, 426 W. 52 St., to Rheinstein Constr. Co., 21 E. 40 St., Zone 17. Approx. **$750,000.** Bids 7/21. CD 7-20.

●**N. C., Raleigh**—HOUSING—G. H. Wright, Jr., pres. Whitaker Park, Inc., Lawyers Bldg., 190 rental housing units, 21 acre site off Whitaker Mill Rd., east of Anderson Heights, to Wright Constr. Co., Lawyers Bldg., **$1,150,000.** J. M. Edwards, Jr., Insurance Bldg., archt.

O., Cincinnati—RESIDENCES—Merl Butler & Joseph Par, 1748 Kemper Ave., Mt. Healthy, forty-two 1 story, bsmt., 24x34 ft. frame residences. Owner builds. **$420,000.**

O., Toledo—TEMPLE—Zenobia Shrine, 1507 Madison Ave., 2 story 60x91 ft., brick, stone temple, to H. J. Specker Co., 1418 Elm St. Approx. **$300,000.** CD 5/10 46.

Okla., Oklahoma City—BANK—Central State Bank, 225 N.W. 1 St., Zone 2, 3 story, bsmt. bank, 306 Central St., to Ellis, Nicholson & Crewer, Hightower Bldg., Zone 2. **$475,000.** CD 10-1.

●**Pa., Ambler** — RESIDENTIAL DEVELOPMENT—Town & Country Builders, 8 E. Glenside Rd., Glenside, 250 unit residential development, separate contracts. **$1,625,000.**

Pa., Chesney Downs (Phila., P. O.)—RESIDENTIAL DEVELOPMENT—Chesney Downs, Inc., 848 E. Haines St., Phila., residential development, Terminal Ave., separate contracts. **$250,000.**

Pa., Conshohocken — CHURCH — St. Marys Roman Catholic Church, Elm and Oak Sts., church, separate contracts, **$250,000.** Sigmund J. Laschenski, 112 S. 16 St., Phila., archt.

●**Pa., Harrisburg**—OFFICE—Commerce Corp., Dauphin Bldg., 14 story office, to Ritter Bros., 1511 N. Cameron St., **$1,000,000.** W. Lynch Murray & Assoc., 1600 N. 2 St., archts. CD 7-25.

Pa., Meadville — LODGE, etc. — Fraternal Order of Eagles, 858 Water St., 2 story, bsmt., 40x90 ft., steel lodge bldg. addns., alterations, to Ortman & Reetze, Box 448, Approx. **$300,000.** CD 5/2.

Pa., Media — RESIDENTIAL DEVELOPMENT—Melvin Leventon, 28 S. 36 St., Phila., residential development, Creek Rd., separate contracts. **$405,000.**

Pa., Norristown—RESIDENTIAL DEVELOPMENT—Francis F. McAdams, 69 and Walnut Sts., Upper Darby, residential development, Hartranft Ave., separate contracts. **$250,000.**

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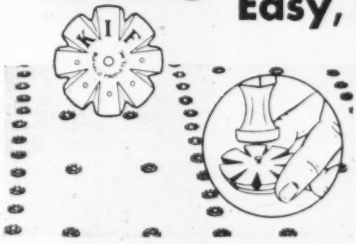
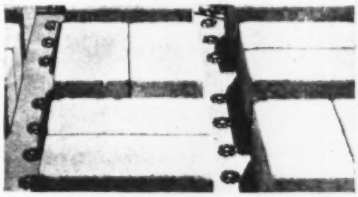
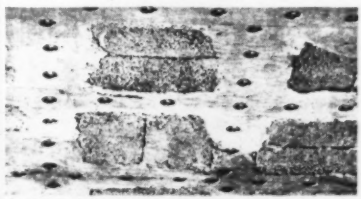


Nail Kifs six inches apart on forms when concrete is to be poured.



If blocks are used, they are placed between the rows of Kifs. Concrete is then poured.



After concrete has hardened, the removal of forms pulls the elastic Kifs out of concrete, leaving clean, undercut niches.

Steps shown at the left were photographed at St. Joseph's Collegiate Institute, Buffalo, N.Y. Siegfried Construction Co., Inc., General Contractor; Seitz & Madden, Plasterers; O'Connor & Delaney and Duane Lyman & Associates, Architects. On this job, 40,000 square feet of ceilings and beams were Kiffed.

* * *

Seigfried Construction Co., Inc. says: "The results of using Kifs for direct plastering on concrete have been so favorable, we will use them wherever possible. Kifs are easy and economical to use and a sure way to know that the plaster will *stay in place.*"

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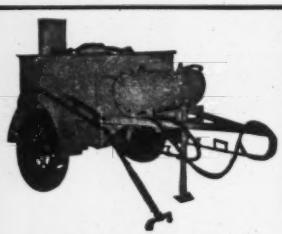

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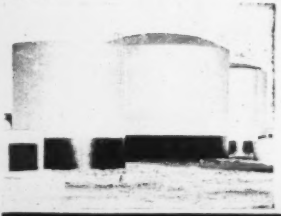

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Pa., Phila. — RESIDENTIAL DEVELOPMENT—H. Berman, 6032 Market St., residential development, Bustleton Ave., separate contracts, **$250,000.** J. Ethan Fieldstein, 1352 Walnut St., archt.

Pa., Phila. — THEATRE, etc — Boardman Smith Corp., 1322 Airdrie St., theatre and stores, Roosevelt Blvd. and Magee Ave., separate contracts. Over **$250,000.** J. Ethan Fieldstein, 1325 Walnut St., archt.

Pa., Phila. — RESIDENTIAL DEVELOPMENT—Oakland Homes, Inc., c/o J. Ethan Fieldstein, archt., 1325 Walnut St., residential development, Oakland St., separate contracts, **$250,000.**

●**Pa., Phila.**—THEATRE, etc.—Samuel Shapiro, 1420 Walnut St., theatre and shopping center, to Leonard Shaffer, 926 Walnut St., **$1,500,000.** Armand Carroll & Wm. J. Stephenson, 262 S. 15 St., archts.

Pa., Phila. — RESIDENTIAL DEVELOPMENT—Sheffield Builders, 5917 N. 5 St., residential development, Souder St., separate contracts, **$413,000.**

●**Pa., Phila.**—APARTMENT DEVELOPMENT—Shubin Bldg. Co., 1325 Walnut St., apartment development, Germantown Sect., separate contracts, **$1,000,000.**

Pa., Phila. — RESIDENTIAL DEVELOPMENT—Temple Builders, 768 64 Ave., residential development, to J. S. Silver, 708 64 Ave., Phila., **$250,000.** Herman Polss, 1701 Walnut St., archt.

Pa., Phoenixville—STORE, etc.—W. T. Grant Co., 1441 Broadway, New York, N. Y., department store and office, to William Linker Co., 2306 Arch St., Phila., **$250,000.** CD 1/13.

●**Pa., Pittsburgh** — APARTMENT — Steelwood Corp., Grant Bldg., 8 story, brick, steel, frame Royal Windsor Apartment, Millwood St. Owner builds. **$1,6000,000.** Avnet & Grove, 615 W. Diamond St., archts.

R. I., Newport — HOMES — John Toppa, Aquaindneck Ave., Middletown, 50 single homes, Eustis Ave. Owner builds. **$255,000.** CD 8/2.

Tenn., Nashville—ENGINEERING—Vanderbilt University, engineering bldg., to W. F. Holt & Sons, 1521 Demonbreun St., Nashville, **$196,820.** CD 6/16/47.

Tex., Bellaire—SHOPPING CENTER—J. S. Norman Bldg. Corp., 4815 Richmond St., Houston, shopping center, own forces. Approx. **$250,000.** CD 7/25.

Tex., El Paso—RESIDENCES—West Texas Builders, Inc., El Paso, 125 residences. Owner builds. Approx. **$625,000.** CD 8/4.

Tex., Houston—APARTMENT—R. & S. Corp., City Natl. Bank Bldg., apartment, to King-Sheets, Inc., City Natl. Bank Bldg. **$396,-048.** CD 8/4.

Tex., Houston—HOUSTON—Hillside Manor, Inc., 3507-A, Greenville St., Dallas, housing, to Tom Lively, 3507-A Greenville St., Dallas. Approx. **$625,000.** George W. Edwards, 1309-A Cochran St., Dallas, archt.

Tex., Houston — APARTMENTS — King & Sheets, City Natl. Bank Bldg., 15 addnl. apartments. Owner builds. Approx. **$750,000.** CD 8/2.

Tex., Houston—COMMERCIAL—Olso Bros., M. Esperson Bldg., No. 2, commercial bldg., Times and Morningside Sts. **$760,000;** stores group, in village near West University Place. **$350,000.** Owner builds. CD 7/28.

Tex., Houston — DWELLINGS — Townsend Constr. Co., 11 Tasgart St., 50 dwgs., Patrick and Evergreen Sts. Owner builds. Approx. **$450,000.** CD 7/25.

Tex., Pasadena — DUPLEXES — Charles R. Odds & Assoc., 3425 University St., Houston, 20 duplexes, 3½ acre tract. Owner builds. **$425,000.** CD 4/8.

Tex., San Antonio—GYMNASIUM, etc.— Sisters of Charity of the Incarnate Word, 4167 Broadway, brick, hollow tile, gymnasium-auditorium, concrete frame and pier and beam bldg., and brick, hollow tile, chapel and convent, concrete frame and slab bldg., to Walsh & Burney, 928 N. Flores St., **$265,000** and **$310,000** respectively. CD 3/24. CD 2/25.

Ont., London—TELEPHONE SERVICE CENTER—Bell Telephone Co. of Canada, 25 Adelaide St. W., Toronto, 1 story and part 2 story, 148x250 ft., rein.-con., steel, brick telephone service center, Robertson-Irwin steel deck, to W. H. Cooper Constr. Co., Ltd., Hunter and Hucheon Sts., Hamilton. Approx. **$275,000.** Bids 7/19. CD 7/8.

○**Ont., New Toronto**—HOUSING—Rex Heslop Homes Ltd., 579 Horner Ave., Toronto, 172 houses, Elmwood Park. Owner builds. **$1,380,000.**

INDUSTRIAL BUILDINGS

BIDS ASKED

August 19

Del., Wilmington—LABORATORY—Hercules Powder Co., 9 and Market Sts., research laboratory, **$400,000.** R. N. Wheelock, c/o owner, ch. engr.

August 30

Ga., Douglasville — WAREHOUSE, etc. — Douglas County Electric Membership Corp., Douglasville, warehouse and office, Plans deposit $25. Southern Eng. Co., 699 Spring St. N.W., Atlanta, archts.

About September 3

Ind., Newcastle — PLANT — Chrysler Corp., 1 Ave. and 18 St., 200x300 ft. brick, steel plant addn. Approx. **$200,000.**

September 6

Ia., Creston — PLANT—Southwestern Federated Power Co-operative, Creston, Sect. 3, installation mechanical equip. and piping Creston Steam Plant, Stanley Eng. Co., Hershey Bldg., Muscatine, engr.

September 7

Mo., Poplar Bluff—DIESEL GENERATING PLANT—M. & A. Electric Power Co-operative, Poplar Bluff, Sect. 2, wells, Sect. 3 bldg., Sect. 4, electrical work for diesel generating plant. Stanley Eng. Co., Hershey Bldg., Muscatine, Ia., engrs. CD 6/10/48.

R. I., Providence—SALES and SERVICE—Colonial Motors, Inc., 1220 N. Main St., (selected list of bidders) 2 brick, cinder block sales and service, auto showroom and repair garage addns., N. Main St. **$110,000.** Henry W. Markoff, 417 Union Trust Bldg., archt. CD 8/20/48.

●**Tex., Pickton**—PLANT—Humble Oil & Refining Co., Cotton Exchange Bldg., Dallas, natural gasoline plant 1 mi. south of here **$2,132,000.** CD 5/12/48.

SOON LETS CONTRACT

Calif., Los Angeles — LOFT—E. Autaky, 624 N. Alta Dr., Beverly Hills, soon lets contract 3 story, rein.-con. loft, 118 and Santee Sts. **$200,000.** H. W. Underhill, 4313 Leimert Blvd. archt.

Calif., Los Angeles — BREWERY — Los Angeles Brewing Co., 1920 N. Main St., soon lets contract 3 story, rein.-con. cellar brewery and 1 story 98x120 ft. wash bldg. **$300,000** L. A. Parker, 408 S. Spring St., archt.

Conn., West Hartford — WAREHOUSE — Pittsburgh Plate Glass Co., 40 Chapel St., Hartford, soon lets contract 1 story, 100x330 ft. brick, concrete warehouse, incl. offices, New Park Ave. $250,000. Ebbets, Frid & Prentice, 862 Asylum Ave., Hartford, archts. CD 11/17/48.

Ga., Chamblee—WAREHOUSE, etc.—Massey-Harris Co., c/o Hanker & Heyer, archts., Commerce Title, Memphis, Tenn., soon lets contract, warehouse and office. **$225,000.**

Ga., Montezuma—PLANT—Spalding Realty Co., W. Elliott Hanvey, Jr., archt., 707 Bankers Insurance Bldg., Macon, soon lets contract mfg. plant. Plans deposit $15.

La., De Ridder—WAREHOUSE, etc.—Beauregard Electric Co-operative, De Ridder, soon lets contract warehouse and office, July 14. G. F. Henry & Co., 1007½ Texas Ave., Shreveport, archts. CD 2/7.

Miss., Carthage—WAREHOUSE, etc.—Central Electric Power Assn., Carthage, soon lets contract warehouse and office, $75,000. Biggs, Weir & Chandler, 224 N. Congress St., Jackson, archts.

N. C., Raleigh—PASSENGER STATION—Southern Ry. System, J. B. Akers, ch. engr., McPherson Square, Wash., D. C., soon lets contract passenger station, W. Cabarrus St. CD 12/10.

Pa., Bryn Mawr—OPERATIONS—Kneedler, Mitsch & Zantzinger, archts., 12 S. 12 St., Phila., soon lets contract operations bldg. for Phila. Suburban Water Co., 762 Lancaster Ave. Approx. **$68,000.**

Va., Radford—PLANT—Colony Box Co., Radford, soon lets contract box mfg. plant. J. L. Williams, Marion, archt.

LOW BIDDERS

Fla., Miami — PLANT — McArthur Jersey Farm Dairy, c/o Robert Fitch Smith, archt., 901 Shoreland Bldg., received bids July 14, dairy plant, L.B. **$528,340.** CD 7/22, under Lit.

Pa., Warren—WAREHOUSE—New Process Co., Warren, 3 story, basmt., 40-68 ft., 1 story, 62x109 ft., 2nd story addn. L-shaped 46x40 ft. brick warehouse and office addn., alterations, from H. Platt Co., 1104 Sedinger Ave., Erie, **$129,960.** CD 7/25.

Tex., Midland — PLANT, etc. — Pittsburgh Plate Glass Co., c/o T. Jackson, 2nd unit of Santa Fe Bldg., Dallas, July 28, plant and shop, from T. C. Bateson Constr. Co., 622 Irwin-Keasler Bldg., Dallas, **$118,600.** CD 7/25.

CONTRACTS AWARDED

Calif., Los Angeles — LOADING STATION—Helms Bakeries, 8800 Venice Blvd., loading station, 16958 Roscoe Blvd., to C. L. Peck, 816 W. 5 St., **$102,000.** Elliot Wing Tayler, 803 W. 5 St., archt.

Calif., Los Angeles — STOREHOUSE—Security First National Bank, 561 S. Spring St., 2 story, 45x120 ft. rein.-con. archives storehouse, to C. L. Peck, 816 W. 5 St., **$120,108.** Est. $100,000. Bids 6/1, awarded 6/8. CD 5/12.

Calif., Oakland—WAREHOUSE, etc.—California Motor Express Ltd., 825 Brannan St., San Francisco, warehouse and office, to Gridley Constr. Co., Box 649, Oxnard, **$74,500.**

Calif., Oxnard — SHOP — Allis-Chalmers Mfg. Co., 558 S. R St., 100x146 ft., steel frame shop, to Gridley Constr. Co., Box 649, Oxnard, **$175,000.** Moffatt & Nichols, Kress Bldg., Long Beach, archts. CD 6/3.

Calif., Redwood City — WAREHOUSE — Paradine Companies, Inc., Chestnut St., warehouse, to Del E. Webb Constr. Co., 5915 Hollis St., Emeryville. Approx. **$68,000.** Kaj. Theill, 580 Market St., San Francisco, engr.

Calif., Richmond — COMPRESSOR — Pacific Gas & Electric Co., 245 Market St., San Francisco, compressor bldg., to MacDonald, Young & Nelson, 251 California St., San Francisco. Approx. **$68,000.**

Calif., South San Francisco—FACTORY, etc. —Stewart & Warner Corp., 601 Turk St., San Francisco, factory and salesroom to Carray Co., 672 El Camino St., San Carlos. Approx. **$120,000.**

Ga., Griffin—WAREHOUSE—Pomona Products Co., c/o contractor, warehouse, to C. A. Kendricks, Griffin. **$83,247.**

Ga., Savannah — PLANT, etc. — Foremost Dairies, c/o Oscar M. Hansen, archt., 701 E. 52 St., dairy plant, addns., alterations, to T. S. Lewis Jr. & Co., 16 E. Bryan St., Approx. **$75,000.**

Ill., Chicago—SHOP—Chicago, Milwaukee, St. Paul & Pacific R. R., R. J. Middleton, ch. engr., 809 Union Station, Zone 6, 67x723 ft., concrete railroad shop bldg., 606 W. Wayman St., to Charles B. Johnson & Son, 6 N. Michigan St., Zone 2. Approx. **$72,000.** Awarded 7-28. K. E. Hornung, 809 Union Station, Zone 6, archt.

Ill., Chicago—RAILROAD SHOP—Chicago, Milwaukee, St. Paul & Pacific R. R., R. J. Middleton, ch. engr., 908 Union Station, Zone 6, 84x152 ft. steel, brick railroad shop, to Interstate General Contractors 5621 N. Glenwood St., **$70,000.** Awarded 7-27. K. E. Hornung, 809 Union Station, Zone 6, archt.

Ill., Melrose Park—FACTORY—Benjamin Moore & Co., 415 Green St., Chicago, Zone 10, 3 story, 61x222 ft., brick, concrete factory, 1 story, 60x202 ft., brick concrete office, 1 story, 24x300 ft. steel warehouse, 1 story, 38x42 ft., brick boiler house, Melrose Park, 25 and North Aves., separate contracts. **$650,000.** CD 2-15.

Ia., Des Moines—PLANT—Hookey Packing Co., 4088 E. 14 St., packing house plant to Wm. Knudson & Sons, Flynn Bldg., **$75,000.** Smith, Brubaker & Egan, 30 N. LaSalle St., Chicago, Ill., engrs. and archts.

Ia., Des Moines—WAREHOUSE—Winston & Newell, 118 4 St., warehouse to Daley Bros., 1500 Old Country Rd., Belmont, San Francisco, Calif., **$100,000.** F. A. Constable, San Francisco, Calif., archt. CD 7-26.

Ky., St. Matthews—SALES and SERVICE—Kuster-Swope Buick, Inc., Lexington Rd., sales and service bldg. to Whittenberg Constr. Co., 2234 S. Floyd St., Louisville. Approx. **$175,000.** Awarded 8-2. Joseph H. Kolbrook, Starks Bldg., Louisville, archt. CD 12-3.

La., Lake Charles—MILL—Farmers Rice Milling Co., c/o contractor, mill, to A. M. Mutersbaugh, Lake Charles. Approx. **$68,000.**

La., New Orleans—WAREHOUSE, etc.—Moreland Hogan, c/o contractor, warehouse and office, to Hogan Bros., 236 Focis St. Approx. **$75,000.**

Minn., Mankato — GARAGE, etc. — Blue Earth-Nicollet Cooperative Rural Electric Assn., Mankato, general contract 1 story, 125x135 ft. garage and office, to E. A. Carlstrom Constr. Co., Mankato. **$109,710.** CD 7-13.

Mo., St. Louis—TERMINAL—Buske & Mueller, Litchfield, Ill., 1 story, 40x71-4½, brick, concrete, truck terminal, 1600 N. 9 St., to Charles J. Grady & Co., 812 Chestnut St., Zone 1. Wood & Meer, 812 Chestnut St., Zone 1, archts.

Mo., St. Louis—TERMINAL—Denver-Chicago Trucking Co., Inc., 1135 S. 6 St., Zone 2, brick, concrete, truck terminal, 50x160 ft. dock, and 30x80 ft. office, 920 N. 11 St. at Cole St., to Murch-Jarvis Co., Inc., 718 Locust St., Zone 1. Approx. **$100,000.** Mark Kalischer, 230 E. Ohio St., Chicago, Ill., archt. CD 7/14/48.

Mo., St. Louis — WAREHOUSE — Western Printing & Lithographing Co., Racine, Wis., 2 story, 134x182 ft., brick, steel, rein.-con. warehouse and shipping bldg., 1720 S. Spring Ave., to Prum-Colhoun Contg. Co., 1706 Olive St., Zone 3. Approx. **$200,000.**

Mont., Kalispell—SHOP and WAREHOUSE —Westmont Tractor & Equipment Co., Kalispell, shop and warehouse, to Ask-Vold Constr. Co., Arcade Bldg., Missoula. **$70,000.**

●**O., Middletown**—FURNACES—Armco Steel Corp., Middletown, three 225 ton open hearth furnace, 2 steel island to F. H. McGraw Constr. Co., First American Bank Bldg. Approx. **$12,000,000.**

Pa., Ashland—FACTORY—Ashland Shirt & Pajama Co., Inc., Front and Chestnut Sts., 1 story, 125x275 ft. steel, brick, concrete factory, to Schneider & Davis, 2940 Mahantongo St., Pottsville. **$136,000.** Philip G. Knoblich, 1513 W. Market St., Pottsville, archt.

Pa., Devon—WAREHOUSE—Samuel Cohen, 504 N. Comac St., Phila., 1 story, 22,500 sq. ft. brick warehouse to Barclay White Co., N. 20 St., Phila. **$150,000.** Henry S. Berg, 1411 Walnut St., Phila., archt. CD 7-27.

●**Pa., Elrama**—POWER PLANT—Duquesne Light Co., 435-6 Ave., Pittsburgh, power plant, 4 mi. above Clairton on Monongahela River, to Bragg Corp., Bruce Bldg., Pittsburgh. Approx. **$28,000,000.** CD 3-29.

●**Pa., McKeesport**—BOILER HOUSE—National Tube Co., Frick Bldg., 5 Ave., Pittsburgh, 1 story, 156x165 ft., steel frame boiler house and gas washer, concrete slab roof, steel siding, separate contracts. **$1,100,000.** Stone & Webster Eng. Corp., 49 Federal St., Boston, Mass., engrs.

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Pa., Morrisville—PACKING HOUSE, etc.—King Farms Co., Bordentown Rd., 1 story, 120x240 ft., brick, concrete block packing house and office, separate contracts, **$100,000.** W. W. Slack & Son, 1401 W. State St., Trenton, archt.

Pa., Phila.—FACTORY—Michael I. Dunsha, 5017 Melrose St., 2 story, 69x85 ft., brick factory addn., separate contracts. Approx. **$68,000.** Charles H. Ingle, 163 W. Penn St., archt.

Pa., Phila. — WAREHOUSE — Owner, c/o contractor, 1 story, 38x140 ft., structural steel, reinforcing steel, brick warehouse, to Charles A. Kessler, 1649 N. Broad St., Approx. **$68,000.**

Pa., Phila.—SHOP—Peco Mfg. Co., Hope St. and Indian Ave., 1 story, 78x154 ft., brick shop, to Lauter Constr. Co., Otis Bldg., **$75,000.** CD 7/20.

Pa., Phila.—WAREHOUSE—Sears, Roebuck & Co., 4640 Roosevelt Blvd., warehouse, Langdon and Sanger Sts., to Irwin & Leighton, 1505 Race St., **$850,000.**

R. I., Esmond—BOILER PLANT—Navaho Weaving Co., Esmond Hill, 1 story, brick, steel, concrete boiler plant, incl. boiler equip. and stack, to Bowerman Brothers, 78 Bath St., Providence.

●**Tex., Carthage**—GASOLINE PLANT—United Gas Corp., Carthage, doubling or expanding gasoline plant, to Hudson Eng. Corp., 2711 Danville St., Houston. Approx. **$3,000,000.** D. R. Pflug, c/o owner, eh. engr.

Tex., Dallas—PRINTING PLANT—Baptist Standard Publishing Co., 611 N. Akard St., design and construction printing plant addn., to Marshall D. Barnett, 7242 Lakewood St., Approx. **$80,000.**

Tex., Fort Worth — SUBSTATION — Texas Electric Service Co., Electric Bldg., reconstructing electric sub-station in Arlington Heights area, own forces. **$85,000.** CD 6/30.

Tex., Houston—SHOP, etc.—Krieger Motors, 1301 Mulma St., auto shop, display, parts storage, to A. J. Johnson, 5324 Pine St., Approx **$70,000.** Delwin V. James, 3908 S. Main St., archt.

Tex., Houston—WAREHOUSE, etc.—Max Krost, 1601 W. Webster St., warehouse and mfg. plant, modernizing and addn., own forces. Approx. **$100,000.** CD 9/13/45.

Tex., Houston—PLANT—Kuhn Paint Co., 4029 Center St., plant addn., own forces. **$75,000.** M. R. Valkenburgh, 6451 Main St., engr.

Tex., Houston—SHOP—Singer Sewing Machine Co., M & M Bldg., sewing machine shop, display, storage, to Thad Broderick Constr. Co., 2914 Quenby St., Approx. **$200,000.** CD 8/8.

Tex., Palestine—SERVICE, SALES SHOP, etc.—Joyce Motor Co., Palestine, auto service, sales, parts, shop, storage. Owner builds. Approx **$75,000.** O. L. Hazelwood, Palestine, archt.

Tex., Plainview—GRAIN ELEVATOR—Harvest Queen Mill, Plainview, 1,000,000 bu. grain elevator, to Johnson-Sampson Co., Salina, Kan., **$375,000.** CD 8/8.

Tex., Rising Star—WAREHOUSE—Higginbotham Mercantile Co., Rising Star, warehouse, own forces. Approx. **$75,000.**

Ont., Cornwall — WAREHOUSE — Brewers' Warehouse Co. Ltd., 19 Richmond St. W., Toronto, 2 brick steel wings for warehouse, to Angus L. MacDonald Constr. Co., P. O. Box 1145, Approx. **$125,000.** Bids 7/28. M. M. Dillon & Co., Richmond St., London, engr. CD 7/11.

●**Ont., Matheson**—MILL, etc.—Canadian Johns-Manville Co. Ltd., Asbestos, Que., design and construction mill bldgs., town site, services, Munroe Twp., near here, to Foundation Co. of Ontario Ltd., 1220 Bay St., Toronto. Approx. **$3,000,000.** CD 7/19, under classified.

Ont., Sarnia—PLANT—Imperial Oil Ltd., 445 N. Christina St. S., 2 story grease plant addn. to refinery, to Sarnia Bridge Co. Ltd., 251 Campbell St., Approx. **$73,000.** CD 4/25/46.

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Ont., Toronto—PLANT—McCosquadale & Blade (Canada) Ltd., Kendal Ave. and Davenport Rd., 1 story, 89x95 ft., concrete, steel plant, to Sinclair-Ferguson Ltd., 1055 Eglinton Ave. W., Approx. $75,000. Allward & Guinlock, 57 Bloor St. W., archt.

UNCLASSIFIED

BIDS ASKED

August 23

†Colorado—TRANSMISSION LINES—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., Flatiron-Longmont-Leyner, and Leyner-Brighton 115-kilovolt transmission lines, Colorado Big Thompson Proj., Spec. 2725. Extended date. L. N. McClellan, ch. engr. CD 7/11.

August 24

N. B., Campbellton — ARENA — H. W. Sutherland, Bank of Nova Scotia Bldg., hockey arena and artificial ice plant, for Campbellton Legion War Memorial Co. Ltd., Campbellton. Approx. $250,000. Plans deposit $10. C. Burgess, 53 Queen St., Ottawa, Ont., archt. CD 1/14.

August 25

North Dakota — RURAL DISTRIBUTION LINES—Baker Electric Co-operative, Cando, labor and greater part materials 351 mi. rural distr. lines, Benson, Pierce and Wells Counties, $375,000. Ulteig Eng. Corp., 114½ Front St., Fargo, engrs. CD 7/5.

†Washington — STATION — Bonneville Power Admin., 729 N. E. Oregon St., Portland, S. Ore., construct Snohomish microwave terminal station, Inv. 4762. Plans deposit $5. L. C. Stewart, engr.

August 26

Nebraska—RURAL DISTRIBUTION LINES—Eastern Nebraska Public Power Dist., Syracuse, 340 mi. rural distr. lines, Johnson, Nemaha, Gage, Pawnee and Richardson Counties, $340,000. CD 2/18.

Ont., Fort William—ARENA—D. M. Martin, city clk., c/o City of Fort William, City Hall, arena. Approx. $500,000. Plans deposit $25. Jenkins & Wright, 200 Zellar Bldg., Kitchener, archts.

August 30

Ala., Dothan — CHURCH — Foster Street Methodist Church, c/o Pearson, Tittle & Narrows, archts., National Bank Bldg., Montgomery, church, $255,000.

Calif., Los Angeles — PARK BLDG. — Bd. Supervs. Los Angeles Co., 501 Hall of Records, rein.-con. Plummer Park Community Bldg., offices, kitchens, auditorium, etc., Spec. 1048J2. $135,000. Bids 6/14 rejected. H. L. Gogerty, 3123 W. 8 St., archt. CD 6/21, under Lit.

†Washington—RADIAL GATES, etc.—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point f.o.b. cars Moses Lake, Wash. radial gates, pin bearings wall plates, gate stills, motor-operated radial gate hoists for East Low Canal, Black Rock check, Station 1077 plus 06, Rocky Coulee check, Station 1208 plus 40; and Rocky Coulee Wasteway Station 1197 plus 75, Columbia Basin Proj., Spec. 2751. L. N. McClellan, ch. engr.

About September 1

La., Lake Charles — BASEBALL PARK — City, City Hall, baseball park, $75,000. Dunn & Quinn, Lake Charles, archts. CD 11/10.

September 1

†Wyoming-Colorado — GROUND WIRES — Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., installing overhead ground wires on Cheyenne-Greeley 115-kilovolt transmission line, Spec. 2758. L. N. McClellan, ch. engr.

September 7

Md., Cockeysville — INFIRMARY—Maryland Masonic Home A. F. & M. Masonic Temple, Baltimore, 5 story, 59x65 ft. brick, stone, steel infirmary. Former bids rejected. Hall, Border & Donaldson, 2211 N. Charles St., Baltimore, archts. CD 5/12, under Lit.

N. Y., Monticello — HOSPITAL—Monticello Hospital, Landfield Hill, hospital addn., alterations. $282,528. Abraham H. Okun, 162 Broadway, archt. CD 4/26/48.

About September 9

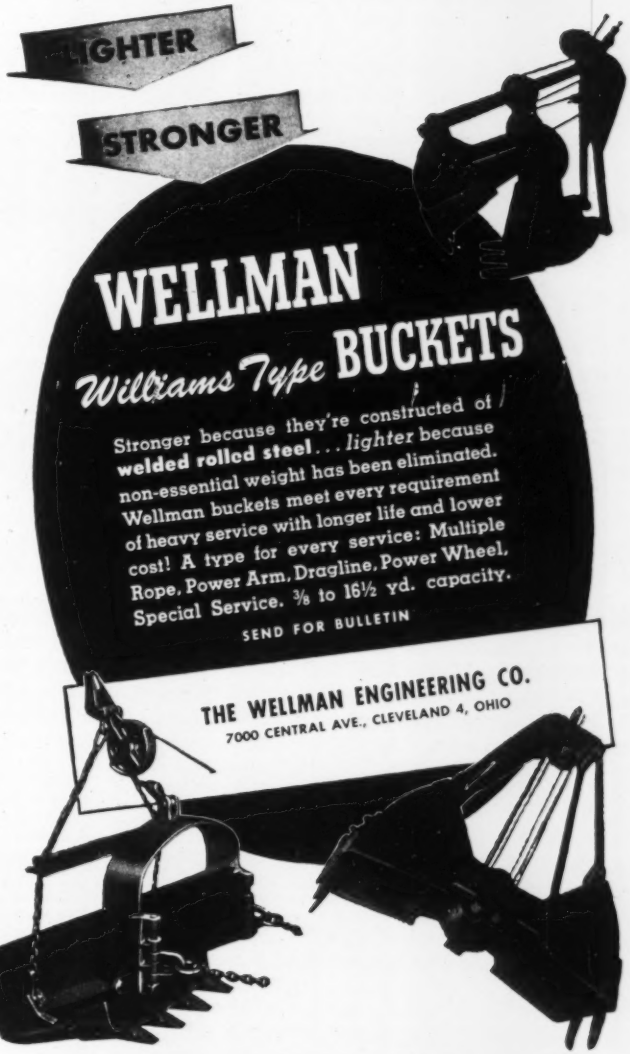
†New Mexico—CONVERTING GAS TO FUEL OIL AND ELECTRICITY—U. S. Eng., P. O. Box 1538, Albuquerque, converting from gas to fuel oil and electricity, Conchas Dam and Reservoir Proj. on State Hy. 129, 30 mi. north of Newkirk, San Miguel Co., Serial No. CIVENG-29-005-59-2. Bids 6/27 rejected. CD 6/17.

September 9

†Arizona-Nevada—CONDUCTOR, etc.—Bureau Reclamation, Ayala Bldg., Phoenix, Ariz., stringing conductor and overhead ground wire on Davis Dam-Hoover Dam and Davis Dam-Parker Dam 230-kilovolt transmission lines and installing disconnecting switches, apparatus, electrical equip. on Davis Tap to Hoover Dam-Basic Magnesium Line, Spec. 2756. L. N. McClellan, ch. engr.; adv. EXR 8/18.

September 13

†North Dakota — TRANSFORMERS, etc. — Bureau Reclamation, Dpt. Interior, Bismarck, one 1,500 kva and one 15 kva transformers, three 15,000 volt circuit breakers, one 69,000 volt disconnecting switch, one set 15,000 volt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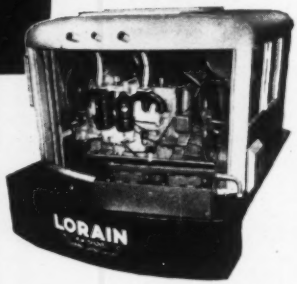

● New fields in heavy material handling by mobile equipment, are being opened by this giant, rubber-tired two-engined crane. Said to be the world's largest, the first of these Waukesha-Diesel-powered Lorain MC-820 Moto-Cranes is working in the world's largest steel mill. It has a safe-rated lifting capacity of 45 tons (90,000 lb.) at a 12-ft. radius. Thirty years ago when Thew built the first portable crane—also a Waukesha-powered Lorain—its capacity was only 3½ tons. The latest Lorain's ability to lift and transport far heavier loads than any previous portable crane, extends the basic advantages of the moto-crane for handling heavy material in steel mills, steel erection, ship and bridge building, oil fields, logging and many other industries.

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disconnecting and by-pass switches, three 69,000 volt disconnecting fuses, one 7,500 volt fuse cutout, one hookstick and fuse remover, 18 current and 3 potential transformers, 1 watthour meter, one portable recording voltmeter for DeVaul substation. Spec. R6-BIS-16 (Region 6), Missouri River Basin Proj.

September 15

†California—DISTRIBUTION BOARD ASSEMBLY, etc.—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Herdlyn, Calif., distribution board assembly, oil purifier power board, compressor power board, misc. power board, heating and ventilating board, power distr. panel board, distr. transformers, thermostats, switches, etc., Tracy Pumping Plant; distr. board assembly heating and ventilating board, distr. transformers, Tracy Switchyard, Central Valley Proj., Spec. 2755. L. N. McClellan, ch. engr.

LOW BIDDERS

●**Calif., San Francisco** — SPORTS ARENA — Winterland Corp., Post and Steiner Sts., project postponed indefinitely, steel, reinf. con. sports arena, Golden Gate Gardens, **$2,000,000.** CD 1/11.

†**N. M., Albuquerque**—STEAM DISTRIBUTION SYSTEM—U. S. Eng., P. O. Box 1538, Aug. 2, steam dist. sys., Serial No. Eng.-291-50-4, from Brown-Olds Plumbing & Heating Corp., P. O. Box 4042, Sta. A, **$224,770.** Est. $160,000. CD 7/20.

†**Oregon**—TRANSFORMERS—U. S. Eng., 19 E. Poplar St., Walla Walla, Wash., Aug. 2, design, mfg. testing, del. seven 56,000 kva. single-phase, 3 winding power transformers, appurtenances for McNary Dam Power Plant, Serial No. Eng-45-164-49-410, from Moloney Electric Co., 5390 Bircher St., St. Louis, Mo. **$857,000.** CD 6/30.

†**Philippine Islands**—PIER, etc.—U. S. Eng., APO 909, c/o PM, San Francisco, Calif., repairing pier and causeway, Pating, Cotabato, Mindenao Island, Eng-94-701-49-20, from J. M. Barredo, Regina Bldg., Escolta, Manila, **237,-111** Pesos. Est. 130,188 Pesos.

CONTRACTS AWARDED

●**Calif., Los Angeles**—SPORTS ARENA—Los Angeles Sports Arena, c/o Stiles Clements, archt., 210 W. 7 St., 15,000 seat indoor sports arena, to Del E. Webb Constr. Co., 5101 San Fernando Rd. Approx **$3,500,000.**

Fla., Tampa — DOCKS — Hillsborough Co., Port Auth., c/o contractor, imprvs. docks in Old McCloskey Shipyard, to Cone Bros. Contg. Co., Jaeger Ave. and Cumberland St., **$148,415.**

Kan., Concordia — DRIVE-IN-THEATRE — Alex Schnuderman, c/o Paseo Theatre, Kansas City, Mo., drive-in theatre, Rt. 81, 2 mi. north of city limits, to Morris Hoffman, Concordia. Approx. **$80,000.** George E. McIntyre, 1016 Baltimore St., Kansas City, Mo., archt.

La., Lafayette—ELECTRIC DISTRIBUTION SYSTEM—Town, municipal electric distr. sys. addns., alterations, to Universal Electric Constr. Co. of Alabama Inc., 2421 Driscoll St., Houston, Tex. **$90,291.** Bids 6/24, awarded 7/19. CD 6/30, under LB.

Miss., Gulfport — TELEPHONE LINES — Southern Bell Telephone Co., Hurt Bldg., Atlanta, Ga., 35 mi. telephone lines, Vancleave Area, owner bonds. **$60,000-$75,000.**

Mo., Rolla—DRIVE-IN-THEATRE—Clifford & Ralph Hough, Lebanon, drive-in theatre, near city limits, separate contracts. Approx. **$60,000.**

Mo., Rolla — DRIVE-IN THEATRE — Rowe-Carney, R. E. Carney Theatres, Rollamo Theatre, Rolla, drive-in theatre U. S. 66, north of Pennant Hotel, separate contracts. **$100,-000.**

O., Cleveland—YARDS and PLAY AREA SURFACING — Cleveland Metropolitan Housing Auth., 2934 Cedar Ave., surfacing yards and play area and planting at Cedar Apartments and Lakeview Terrace, to Brookpark Constr. Co., 4050 Brookpark Rd., Brooklyn Village. **$57,333.** Awarded 7/29.

Pa., Phila.—ZOOLOGICAL GARDENS—Fairmount Park Comm., City Hall, Zoological Gardens, Carnivora House, Henry E. Baton, Inc., 1717 Sansom St. **$690,000.** Bids 7/14. CD 6/26, under LB.

Texas — RURAL DISTRIBUTION LINES — Jackson Electric Co-operative, LaWard, rural distr. lines, Jackson Co., Purchase and Hire. **$95,000.** CD 4/21.

Texas — RURAL DISTRIBUTION LINES — Rita Blanca Electric Co-operative, Dalhart, Sect. 1, rural distr. lines, Dallas Co., force account. **$88,000.** CD 9/27.

Texas—GAS LINE—Lone Star Gas Co., 1915 Wood St., Dallas, 70 mi. 5½ in. natural gas line between Marble Falls, Lampasas, Burnet and Lometa, force account. **$135,000.** CD 7-16.

●**Texas**—GAS PIPELINE—United Gas Pipe Line Co., Alamo Natl. Bldg., San Antonio, 72 mi. 20 in. natural gas pipeline main from Agua Dulce to San Antonio, to Brown & Root, Inc., Box 13, Houston. Approx. **$2,450,-000.** A. D. Greene, c/o owner, ch. engr. CD 3/18/49.

Tex., Alpine—PARK—Big Bend National Park, Alpine, park construction, to Rich & Smith, Alpine. **$62,000.**

Tex., Electra—RADIO STATION—Oil City Broadcasting Co., Electra, radio station, own forces. Approx. **$70,000.**

B. C., Sandspits—WHARF—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., wharf, to Fred Atkins, E. J. Palmer & A. W. Way, Vancouver. Approx. **$69,801.** R. Blais, c/o owner, engrs.

CONSTRUCTION REPORTS—Second Section

WATER SUPPLY

BIDS ASKED

August 22

Ont., Toronto—R. Harrison, secy., c/o Scarborough Twp. 1666 Kingston Rd., laying, jointing approx. 18,558 lin. ft. 6-in to 12-in. c.i. watermains, valves, hydrants. Approx. $40,000. Plans deposit $5.

August 23

Ont., Toronto—Mayor, supply and delivery water meters, for Municipality. Murray Stewart, city engr.

August 25

Wash., Bellingham—City, City Hall, two 500,000 gal. water storage reservoirs, $157,000. John W. Cunningham & Assoc., Spalding Bldg., Portland, Ore., engrs. CD 7/30/45.

August 27

O., Bellbrook—City, Mr. John Black, clk., Bellbrook, water distr. sys., and elevated storage. $175,000. Plans deposit $10. Alden E. Stilson & Assoc., 209 S. High St., Columbus, engrs.

August 29

Ark., McCrory—City, water sys. extens., improvs. Plans deposit $10. Dickinson & White, 114 N. Spring St., Little Rock, engrs. CD 7/11.

Ia., Cedar Falls—City, City Hall, water sys. $100,000.

Aug. 30

Ga., Augusta—Richmond Co., Augusta, water distr. sys. in Fleming Heights Area. Plans deposit $10. Wiedeman & Singleton, C & S National Bank Bldg., Atlanta, engrs.

Ga., Milledgeville—Baldwin Co., Milledgeville, WW sys., Approx. $50,000. Extended date, J. R. Bracewell & Assoc., Buckhead Theater Bldg., Atlanta, engrs. CD 7/15.

August 31

B. C., Victoria — Greater Victoria Water Distr., Stobart Bldg., 35,300 ft. steel 36, 38 and 48 in. water pipe. Plans deposit $10. F. C. Stewart, 207 W. Hastings St., Vancouver, engr. CD 3/3/47.

September 2

Ga., Newman—City, filtration plant addn. Plans deposit $25. Wiedeman & Singleton, C & S National Bank Bldg., Atlanta, engrs.

Ill., Nashville—City, City Hall, imprv. water treatment plant, Caldwell-Rhoads Co., West College at Diamond Sts., Jacksonville, engr. CD 4/11/46.

September 9

Fla., Ocala — City, constructing trickling filter plant, conventional lime-soda water softening plant, with several storage lift stations. Proj. 4724-13 and 4405-7. Russell & Axon, P.O. Box 1431, Daytona Beach, consult. engr. CD 9/27/48.

About September 12

●Colorado—U. S. Engr., P.O. Box 1538, Albuquerque, N. M., imprv. water supply facilities and equipping water wells John Martin Reservoir Proj., Caddoa, CIVENG -29-005-59-3.

Bids Asked

Tex., Houston—S. N. Adams, 3713 Inwood St., c.i. waterlines, facilities, adjoining Tall Timbers between San Felipe and Westheimer Rds. $35,000. Howe & Wise, 4119 San Jacinto St., engrs.

LOW BIDDERS

●Colorado—U. S. Engr., P. O. Box 1538, Albuquerque, N. M., rejected bids June 21, imprv. water supply facilities and equipping water wells, John Martin Reservoir Proj., Caddoa, Serial No. Eng. 29-005-49-65. Will re-advertise. CD 6/3.

Conn., Hartford—Metropolitan Dist. Water Bureau, Bd. Contract & Supply, 115 Broad St., July 28, furnishing 10,000 ft. 12 in. cement-lined centrifugally c.i. pipe. Contr., 157, from Florence Pipe Fdry & Machine Co., Public Ledger Bldg., Phila., Pa. **$35,300.** CD 7/20.

Conn., Willimantic—City, Water Bd. Alderman, June 28, 16 in. pipeline water sys., from Mansfield Pumping Station, Contr. 2, from F. B. O'Neil & Co., 22 Preston St., Hartford, **$254,479.** CD 7/12.

N. D., New England—City, July 18, watermains, sewers, from Dreher Constr. Co., 110 3 St., Bismarck, **$65,523.** L. W. Viegle, Dickinson, engr.

O., Christianburg — Village, July 28, water distr. and elevated storage, from Roy Wilt, Fletcher, **$73,000.** CD 6/21.

Tex., Beaumont — City, City Hall, Aug. 3, watermains exten. and enlargement several sects. city, from Miller-Crawford Constr. Co., Grove St., **$22,961,** materials by owner. **$19,600.** R. C. Black, city engr. CD 12/15.

Tex., Houston—City, City Hall, 900 Brazos St., from Layne Texas Co., Ltd., 5402 Lawndale St., 3 water supply wells. Contr. A, **$173,249** est. $100,000; 3 wells, Contr. B, **$171,001,** all foregoing northeast sect. of city; 3 wells, Contr. C, northwest sect. at Heights Field, 19 and Nicholson Sts., Yale St., **$166,365** est. $150,000; 2 wells, Contr. D, northwest sect. at Heights Station, **$111,165.** L. Fugate, city engr.

Va., Front Royal—Town, Aug. 3, water supply and distr. sys., from Kay Brown Constr. Co., Front Royal, **$33,554.** CD 7/22.

CONTRACTS AWARDED

Ala., East Brewton—City, WW imprvs., to E. N. Murray, Buena Vista, Ga., **$38,220.** Bids 8/3. CD 7/15.

Calif., Gustine—City, City Hall, municipal WW sys., to W. M. Lyles Co., 5251 Hartvey St., Fresno, and Crows Landing Hardware Co., Crows Landing, **$28,895.** Bids 8/1.

Ga., Bowden—Twn. WW imprvs., to J. B. McCrary Co., 22 Marietta St., Bldg., Atlanta, **$75,500.**

O., Marietta—City, Lowell Russell, city service dir., Marietta, enlarging and rehabilitating Marietta WW plant, to W. H. Heibg, 15 Tiber Way, **$150,000.** Bids 7/15, awarded 8/4. CD 6/22.

S. C., Pendleton—City, exten. watermains, to serve 2 new housing projects, to Bailey Constr. Co., Greenville, **$28,000.**

Tex., Alamo Heights—City of Alamo Heights, 6115 Broadway, City Hall, San Antonio, water supply well, to J. R. Johnson Drilling & Supplies, 105 Humble St., San Antonio, **$31,200.** R. W. Stiles, city engr.

Tex., Corpus Christi—Dr. H. C. Hoisington, 410½ Peoples St., c.i. waterlines, to Mitchell Darby Constr. Co., Box 479, Pharr, **$33,391.** H & M Eng. Co., 127 N. Staples St., engr.

Tex., Rockport—City, 6 in. c.i. watermains, Purchase and Hive. Approx. **$45,000.**

Wash., Tumwater—Town, Town Hall, installing 11,900 ft. 5-to 8-in. c.i. pipe, to Thornburg & Logozo, 4608 36 Ave. S. W., Seattle, **$46,000.** Est. $50,000. CD 7/26.

Man., Flin Flon—Municipality, water sys., etc., to W. C. Wells Constr. Co. Ltd., 140 F Ave., Saskatoon, Sask., **$180,000.** W. N. Venables, town engr. CD 4/8.

Ont., Weston—City, City Hall, watermains, Main St., to Godson Contg. Co. Ltd., 202 W. Richmond St., Toronto, **$50,000.** E. F. Barrat, 120 Main St., engr.

Que., St. Hyacinthe — Municipality, water sys. extens., day labor. **$65,000.** J. A. Lalonde & Co. Ltd., 958 Dunlop Ave., Outremont, engr.

SEWERS, WASTE DISPOSAL

BIDS ASKED

August 29

Mass., Needham—Town of Needham P. Wks. Dpt., Town Hall, sewers, storm drains, at Veterans Housing. Approx. $50,000. Plans deposit $10. Metcalf & Eddy, 1300 Statler Bldg., Boston, engrs. CD 3/21/46.

August 30

Ga., Augusta—Richmond Co., Augusta, sewage collection sys. Fleming Heights Area. Wiedeman & Singleton, C & S National Bank Bldg., Atlanta, engrs. CD 12/1/48.

Ga., Milledgeville—Baldwin Co., Milledgeville, sanitary sewerage sys. Approx. $50,000. Extended date, J. R. Bracewell & Assoc., Buckhead Theater Bldg., Atlanta, engrs. CD 7/15.

August 30

New York—President Queens Boro, 126-55 Queens Blvd., Kew Gardens, Zone 15, storm sewers, appurtenances, Horace Harding Blvd. and 99 St.; combined sewer, appurtenances, 99 and Xenia Sts., Horace Harding Blvd.; sanitary sewer, appurtenances Horace Harding Blvd.

August 31

Pa., Phila.—Dpt. Property & Supplies, 18 and Herr Sts., Harrisburg, sewage disposal plant addns., Phila. (Byberry) State Hospital. $300,000. Plans deposit $10. H. A. Kuljian & Co., 1200 N. Broad St., Zone 21, engrs. CD 2/28.

In September

O., Delaware—City, 23 new main lines and laterals expanding city's sanitary sewerage sys. $210,000. Sherwood Borland, city engr.

September 9

N. Y., Albany—Bd. Contract & Supply, City Hall, Open Cut Portion of Beaver Creek Trunk Relief Sewer, approx. 1,600 ft. reinforced, sewer from vicinity of S. Pearl St. to Hudson River along Rensselaer St. Plans deposit $25. Parsons, Brinckerhoff, Hall & MacDonald, 51 Broadway, New York, Zone 6, engrs.

September 14

N. Y., Brooklyn—Dpt. P. Wks., Municipal Bldg., New York, Zone 7. Contr. 9, heating and ventilating; Contr. 10, plumbing for Owl's Head Sewage Treatment Works. Plans deposit $25., structures and equip. Contr. 5. Plans deposit $50. CD 12/28/44.

●Neb., Omaha — City, Benson Sewer, $1,200,000. E. W. Woodbridge, city engr. CD 11/10.

Bids Asked

Tex., Houston—S. N. Adams, 3713 Inwood St., sanitary and storm sewers, adjoining Tall Timbers, between San Felipe and Westheimer Rds. $65,000. Howe & Wise, 4119 San Jacinto St., engrs.

LOW BIDDERS

Calif., San Jose—Santa Clara Co. Sanitation Dist. 2, Courthouse, Aug. 2, sanitation sewers, from A. J. Peters & Son, 534 Stockton Ave., **$157,637.**

Calif., Selma—City, City Hall, Aug. 1, sanitary sewage disposal plant, from Atkinson Constr. Co., 5334 E. Tulare Ave., Fresno, **$93,985.** CD 6/23.

Ore., Portland—City, City Hall, Aug. 9, 60 m. g. daily capacity sewage treatment plant, incl. 2 story admin. bldg., incl. sewage disposal laboratory, from L. H. Hoffman Co., 715 Southwest Columbia St., Portland, **$980,621.** CD 7/22.

Ore., Salem—City, City Hall, Aug. 3, interceptor sewer project, from Werner & Jeske, 492 Park Ave., Eugene, **$216,974.** CD 7/20.

Alaska, Ketchikan—City, City Hall, July 6, Main and Dock St. sewers and paving and Ketchikan Creek sewers, from Kyle & Patterman, Ketchikan, **$124,074** and **$115,090** respectively. (**Correction**—name of low bidder.) CD 7/12, under LB.

CONTRACTS AWARDED

Calif., Orinda—Central Contra Costa Sanitary Dist., 1522 Mt. Diablo Blvd., Walnut Creek, collecting sewers, Dist. 14, to Underground Constr. Co., 75 Ave. and San Leandro Blvd., Oakland, **$287,957.** Bids 8/4. CD 7/27.

Tex., Corpus Christi—Dr. H. C. Hoisington, 410½ Peoples St., sanitary sewers, to C. L. Castor, 801 Ohio St., **$55,000.** H & M Eng. Co., 127 N. Staples St., engr.

BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

August 22
British Columbia
August 23
Massachusetts
August 24
Louisiana
Maine
August 26
Alabama
Kentucky
North Dakota
Tennessee

August 31
California
Maine
September 1
California
September 2
Pennsylvania
September 22
Montana
September 30
Pennsylvania

La., Shreveport—City, City Hall, concrete, steel, viaduct, approaches. Plans deposit $20. E. M. Freeman, Texas Eastern Bldg., engr.

LOW BIDDERS

Connecticut—State, G. Albert Hill, hy. comr., Hartford, Aug. 8, steel bridge over West River with 219 ft. approaches, U. S. Rte. 1, from Marianna Constr. Co., 227 Forbes Ave., New Haven, **$99,306***41** ft. span steel bridge to carry Hartford-Glastonbury Expressway over Griswold St. also 275 ft. grading, from Urbanik Constr. Co., Main St., Southington, **$79,777***** bridge over N.Y., N.H. and H.R.R., 25 ft. span paving 1500 ft. hy. Thompson, from General Eng. & Constr. Co., 12 Stukely St., Providence, R. I., **$78,755.** CD 7/28.

Maryland—State Hy. Dpt., Baltimore, Aug. 9, 2 double 15 ft. span by 10 ft. rise, rein.-con. box culverts over Brier Ditch and branch of Brier Ditch, State Rt. 295, Contr. P 646-1-515, Prince Georges Co., from Waco Contg. Co., 5115 Belair Rd., Baltimore, **$137,587.** CD 8/2.

Maryland—State Hy. Dpt., Baltimore, Aug. 9, permanent steel form fabrication and delivery, Chesapeake Bay Bridge, Anne Arundel, CHH 10-10-87, Sandy Point and Stevensville, Anne Arundel and Queen Anne Counties, Alternate 1, furnishing fabricated steel pier forms, reinforcing steel, and w.i. protection plates for Piers 1 to 22 inclusive, 24 to 27 inclusive and 29 to 57 inclusive. Alternate 2, furnishing fabricated steel pier forms, reinforcing steel and w.i. protection plates for Piers 1 to 22 inclusive, 24 to 27 inclusive, and 29 to 40 inclusive; Alternate 3, furnishing fabricated steel pier forms, reinforcing steel, and w.i. protection plates, for Piers 11 to 22 inclusive and 29 to 40 inclusive, from Bethlehem Steel Co., Mercantile Trust Bldg., Baltimore, base bid **$1,717,121** Alt. 1, **$1,249,659;** Alt. 2, **$1,020,-377;** Alt. 3, **$1,787,236.** Est. $2,291,917. CD 7/21.

●Maryland—State Hy. Dpt., Baltimore, Aug. 9, Piers 24 to 27 (inclusive) Contr. 10-9-87, Chesapeake Bay Bridge, Anne Arundel and Queen Anne Counties, from Merritt Chapman & Scott, 70 Battery Pl., New York, N. Y., Raymond Concrete Pile Co., 140 Cedar St., New York, N. Y., and Arundel Corp., Pier 2, Pratt St., Baltimore, **$3,120,269.** CD 7/5.

Wyoming—State Hy. Comm., J. R. Bromley, supt., Cheyenne, rejected bids Aug. 5, four 1-beam span overhead crossing over the Union Pacific R.R. tracks near Como, incl. grading, draining, approaches 0.322 mi. Rawlins-Medicine Bow Rd., F.A.P. No. F-91-221 (3), Carbon Co. L. R. **$195,568.** CD 7/27.

CONTRACTS AWARDED

New York—Bureau Contracts & Accounts, Albany, grade separation structure carrying Ashford Ave. in Dobbs Ferry, over tracks and tracks of New York Central R.R., Westchester Co., to Horn Constr. Co., 1776 Broadway, New York, Zone 7, **$853,860.** Bids 7/13. CD 7/15, under LB.

Washington—State Hy. Dpt., Olympia, 2 rein.-con. bridges with slope protection, 0.037 mi. Primary State Hy. 9, Storm King Point, F.A.P. No. F-007-3(2), Unit 2, Chelan Co., to Port Constr. Co., Port Angeles, **$64,931.** Bids 8/5. CD 7/21.

Wyoming—State Hy. Comm., J. R. Bromley, supt., Cheyenne, three 35 ft. truss spans over the Black's Fork River on the Green River-Linwood Rd., SP No. SC 2579, Sweetwater Co., to Wyoming Constr. Co., Laramie, **$59,003** est. $62,635***approx. 357 ft. bridge across the North Platte River at Torrington, with detour bridge grading, drainage, base course surf., oil treatment by road mix method 0.751 mi. Torrington-South Rd. F.A.P. No. F-99 (4), Goshen Co. to Etlin E. Peterson, 602 E. 15 St., Casper, **$320,628** est. $368,891. Bids 7/5. CD 7/27.

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EMERYVILLE 8, CALIFORNIA

Quebec—Province of Quebec, Quebec City, bridge over Yamaska River, Farnham, to Quemont Constr. Inc., 285 Bernard St., Montreal, **$260,000**; bridge over Chair, to A. Bughdad, St., Chair, **$55,000**. Grand total $255,000. Olivier Desjardins, Dpt. P. Wks., Quebec City, engr.

Quebec — Dpt. P. Wks., Quebec City, bridge over Riviere a L'Ours at St. Prime, to Kinduroe Constr. Ltd., Approx. **$100,000**. O. Deslauriers, c/o owner, engr.

STREETS AND ROADS

BIDS ASKED

August 22

Mass., Worcester—City, P. Wks. Dpt., City Hall, approx. 4,744 ft. public street. Approx. $50,000.

STATE HIGHWAY LETTINGS

August 23	**August 30**
Illinois	**Kansas**
August 24	**August 31**
Louisiana	**California**
August 26	**September 1**
Alabama	**California**
Idaho	**September 2**
Kansas	**Pennsylvania**
Kentucky	**September 9**
Minnesota	**Pennsylvania**
Tennessee	**September 22**
	Montana

August 31

Pennsylvania—Pennsylvania Turnpike Comm., 11 N. 4 St., Harrisburg.

Berks and Chester Counties—3.8 mi. Turnpike Sect. 26-C in Caernarvon Twp. and West Nantmeal Twp.

Chester Co.—4.62 mi. Sect. 27-A in West Nantmeal, East Nantmeal and Wallis Twps.

Lancaster and Berks Counties—6.34 mi. Sect. 26-B, Brecknock Twp., and Caernarvon Twp.

September 14

●†**Idaho**—Bureau P. Rds., General Services Admin., P. O. Box 1552, Boise.

Kootenai Co. — Blue Creek Bay bridge, $1,500,000.

Bids Asked

Tex., Houston—S. N. Adams, 3713 Inwood St., street construction and asph. paving, adjoining Tall Timbers between San Felipe and Westheimer; Rds. $75,000. Howe & Wise, 4119 San Jacinto St., engrs.

LOW BIDDERS—

California—State Div. Hys., Sacramento, Aug. 3, 1 conc. on cement treated subgrade and plant mix on c. conc. b. surf. on imported borrow 1 mi. Golden Gate Ave., between 23 St. and H St. North of Canes Circle, Kern Co., from Griffith Co., 1060 South Broadway Los Angeles, **$309,533**. CD 7/13.

Connecticut—State, G. Albert Hill, hy. constr. State Office Bldg., Hartford, Aug. 8, paving 8.375 ft. Campbell Ave., West Haven, from C. W. Blakeslee & Sons Inc., 56 Waverly St., New Haven, **$141,822**; grading, drainage 3,927 ft. incl. rein.-con. culvert, Shelton, from Macland Constr. Co., 222 Forbes Ave., New Haven, **$371,544**. CD 7/28.

†**Idaho**—Bureau P. Rds., General Services Admin., 607½ Bannock St., Boise, received one bids Aug. 2, clearing 6.312 mi., Lewis & Clark Hy. Lolo National Forest, Proj. 16-6, CD 7/22, Idaho Co.

Ill., Chicago—City of Chicago, Dpt. Purchases Contracts & Supplies, City Hall, paving W. 18 St. from S. Western to S. Hiles Island Aves.; Sect. 6405 C. S., from J. M. Corbett Co., 2501 S. Salt St., Alternate 1, b. conc. on flexible base, **$578,927**. Alternate 2, c. conc. b. on flexible base, **$583,016**; b. conc. on flexible base paving W. Devon St. from N. Kedzie to Western Aves., Sect. 6707 C. S., from Arcole Midwest Corp., 3225 Main St., Skokie, **$284,688**.

Maine—State Hy. Dpt., Augusta, Aug. 3, bit. stay 2.241 mi. Addison and Jonesport, F. A. S. P. S. 114 (3), from P. E. Sisk & Co., Pittsfield, **$51,846*****bit. grav. 2.516 mi. Embden, F. A. S. P. S. 57 (1), from McEachern & Perkins, Greenville Junction, **$76,410*****b. conc. s.002 mi. Newburg and Hampden, F. A. S. P. S. 56 (1), from The Bridge Constr. Corp., Augusta, **$268,095**. CD 7/26.

●**Maryland**—State Hy. Dpt., Baltimore, Aug. 9, grading, drainage, surf. with U. S. Rt. 50 1.27 mi. from point 2 mi. west of Mt. Holly to Sunburst Ave., Cambridge, and divided hy. connection between U. S. Rt. 50 and Sunburst Ave., Contr. D 211-1-115, Dorchester Co., from T. B. Gatch & Sons, 5928 Belair Rd., Baltimore, **$222,977*****grading, drainage, surf. 3.788 mi. hy. beginning on State Rt. 28, 1.7 mi. east of Unionville, extending westerly to Junction South of Unionville to joint State Rt. 26, approx. 1.35 mi. east of Libertytown, Contr. F 476-1-615, Frederick Co., from T. Elsie Russell, Frederick, **$753,383*****grading, drainage, surf. 6.4 mi. divided highway beginning at South River near Defense Hy. Rt. 50, and exten. westerly by relocation to Rt. 301, Contr. AA 383-3-315 and F 631-2-515, Anne Arundel Co., from C. J. Langenfelder & Son, Inc., 3301 Pulaski Hy., Baltimore, **$1,971,861**. CD 8/2.

†**Montana**—Bureau P. Rds., General Services Admin., Broadway Oak Bldg., Portland, Ore., Aug. 5, surf., bit. surf. 5, 585 mi. Flathead Lake Hy., Flathead National Forest Proj. 14-A2, Bl. Lake Co., from F. & S. Contg. Co., 1300 Chicago St., Butte, **$89,403**. CD 7/25.

†**Nevada** — Bureau Public Roads, General Services Admin., Carson City, Aug. 5, 1.464 mi. Hy. FH-18(1), Owyhee River, Humboldt National Forest, Elko Co., from Duffy Reed Constr. Co., Twin Falls, Idaho, **$160,611**. CD 7/26.

Oregon—State Hy. Comn., Salem, Aug. 2, grading, surf. paving 0.464 mi. hy. roadbed, constr. 3 rein.-con. structures Tillamook St.-Broadway Bridge east, Pacific Hy. west, Multnomah Co., from C. J. Montag & Son, N. E. 78 and Halsey Sts., Portland, **$865,912**. CD 7/22.

Oregon—State Hy. Comn., Salem, Aug. 1, grading 2.56 mi. bit. macad. surf. 13.4 mi. Summit-Tiovana Park Sect. of Oregon Coast Hy. FAP F-150 (23), Clatsop Co., from Leonard & Slate Oregon Ltd., 7805 S. W. 4th St., Portland, **$325,675**. CD 7/22.

†**Oregon**—Bureau Public Roads, General Services Admin., Broadway-Oak Bldg., Portland, Aug. 4, grading 4 mi. North Umpqua Hy., Umpqua National Forest, Oregon Forest Hy. Proj. 4F43, Douglas Co., from Kuckenberg Constr. Co., 11104 N. E. Holman St., Portland, **$316,387**. CD 7/27.

Pa., Phila.—Dpt. P. Wks., City Hall Annex, street paving, Schedule L, from General Asphalt Paving Co., 6851 Rising Sun Ave., **$173,737**. Dudley T. Corning, hy. eh. engr. CD 10/30/44.

Tex., El Paso—City, City Hall, July 28, paving, 1½ in. hot mix asph., 2 in. crushed caliche gravel base, concrete curbs, Estrella St. and Tompkins Ave., from Vowell Constr. Co., Upper Valley, El Paso, Approx. **$55,000**. Est. $50,000.

Va., Danville—City, Danville, paving N. Main and N. Union Sts. from Laramore Constr. Co., Danville, **$55,262**. CD 9/10/47.

†**Washington**—Bureau Public Roads, General Services Admin., Broadway-Oak Bldg., Portland, Ore., Aug. 5, grading, surf. Gold Creek Rd., Chelan National Forest, Washington Forest Development Rd. Proj. 322-A, Okanogan Co., from J. W. Briggs, Grandview **$123,800**. CD 7/25.

Washington—State Hy. Dpt., Olympia, rejected bids Aug. 5, grading, surf. 4.9 mi. Mt. Spokane State Park Rd., Spokane Co., L. B. **$41,971**. CD 7/21.

Wyoming—State Hy. Comn., J. R. Bromley, supt., Cheyenne, rejected bids Aug. 5, asph. 3.142 mi. Goose Egg Rd., SP No. S-2633, Natrona Co., L. B. **$27,992**; received no bids Aug. 5, base course surf., oil treatment by road mix method and misc. 4.5 mi. Thayne-Bedford Rd., SP No. S-2838, Lincoln Co. CD 7/27.

CONTRACTS AWARDED

Ala., Tuscaloosa—City, paving 32 city streets to D. C. Cosper Contg. Co., Tuscaloosa, **$66,000**. Bids 7/26.

Arizona—State Hy. Dpt., Phoenix, realignment and constr. 5½ mi. U. S. 66, 10 mi. east of Ash Fork, to Basich Brothers, San Gabriel, Calif., **$565,538**. Bids 6/24, awarded 8/5. CD 6/17.

Arizona—State Hy. Dpt., Phoenix, reconstructing 11½ mi. Tucson-Picacho Hy., point 9½ mi. southeast of Picacho, Navajo Co., Arizona Sand & Rock Co., 7 St. Phoenix, **$51,478**. Bids 7/27, awarded 8/2. CD 8/3.

Calif., Long Beach—Long Beach Harbor Dpt., 1333 El Embarkadero St., b. conc. harbor areas, to Sully-Miller Constr. Co., 1500 7 St., **$86,080**. Bids 7/29.

Fla., Jacksonville—City, repairing, parts various streets, to Asphalt Paving, Inc., 3726 Norwood Ave., **$117,429**. Bids 1/8, awarded 8/2.

Illinois—State Hy. Dept., c. conc. 0.24 mi. Rt. 41, in Havana on Promenade St., from Durham St. north to Laurel St. and on Laurel St. from Promenade St. east to Harpham St., to Sangamo Construction Co., 700 N. MacArthur Blvd., Springfield, **$51,909**.

Louisiana—State Hy. Dpt. Baton Rouge, shaping roadway, small drainage structures, bit. surf. to 7.175 mi. Pineville-Effie Hy., Sects. 1 and 21, State Rt. 57 D. S. P. 142-01-05, Rapides Parish, to M. E. Folland, Bossier City, **$103,802**. Bids 8/26. CD 7/18.

Maryland—State Hy. Dpt., Baltimore, grading, drainage, surf. 3.885 mi. dual highway, beginning Herring Run Creek, approx. 1.9 mi. West of Sinepuxent Bay, exten. westerly by relocation to 0.3 mi. west of State Rt. 452, Contr. Wor 253-1-115, Worcester Co., to Nello L. Teer Co., Durham, N. C., **$947,116**. Bids 6/28, awarded 8/2. CD 6/22.

Minn., Grand Rapids—Itasca Co., c/o auditor, Grand Rapids, improv. 5.6 mi. Proj. S 217 (5), 6.3 mi. Minn. Proj. S 66 (8), 2.2 mi. Minn. Proj. S 812 (5), 8.1 mi. Minn. Proj. S 217 (2), to Hawkinson Constr. Co., Grand Rapids, **$133,575**. Bids 8/2. CD 7/21.

Nebraska—State Dpt. Roads & Irrigation, Lincoln, grading, culverts, 8.8 mi. Tecumseh north, FA F 53, Johnson Co., to Meridian Constr. Co., York, **$168,166*****grading, culverts, Louisville-Plattsmouth, FA S-8 92, Cass Co., to Nichols Constr. Co., Geneva, **$79,857*****roads, bridges and guard rail, 8.8 mi. Tecumseh north, FA F 453, Johnson Co., to Condon-Cunningham Co., 4229 Lafayette St., Omaha, **$96,189*****grading, gray paving, culverts, in and near Pender, FA F 262 and F 321, Thurston Co., to Abel Constr. Co., 895 N. 16 St., Lincoln, **$58,800**. Grand total $403,312. Bids 7/28. CD 7/21.

Neb., Chadron—City, paving, to Missouri Valley Constr Co., Omaha National Bank Bldg., Omaha, **$91,843.** Bids 7/25. Fulton & Cramer, 922 Trust Bldg., Lincoln, engrs.

Neb., Syracuse—City, paving, to Peter Kiewit Sons Co., Omaha National Bank Bldg., Omaha, **$72,078.** Bids 7/29.

●**New York**—Henry A. Cohen, dir., Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, let contr paving wide elliptical arch 50 ft. span concrete arch 53 ft. span, rigid frame 87 ft. 0.58 mi. Dist. 8, Cross County Parkway to Hutchinson River Parkway (Westbury Connection), Contr. No. C 49-1, Westchester Co., to Ruseiano & Son Corp., 728 E. 242 St., New York, **$1,597,000.** Bids 6/13. CD 7/15, under LB.

N. D., Grand Forks—State Bd. Higher Educ., Bismarck, paving, drainage at University of North Dakota, to Northern Constr. Co., Grand Forks, **$77,389.** Bids 7/15. CD 7/27, under LB.

Ohio—State Hy. Dpt., Columbus. Zone 1, stabilized base course, let seal coat paving 5.383 mi. S.R. 668, S. 357 mi. S.R. 664, Perry and Fairfield Counties, to The Shelly Co., Thornville, **$95,659** est. $12,350***/ton cone. w/d'n., resurf., 3.923 mi. S.R. 2, U.S. Rt. 6, Williams and Defiance Counties, to Arthur S. Lanken-derfer, Inc., 4690 W. Bancroft St., Toledo, **$205,939** est. $217,200***/ton, conc. w/d'n., resurf. 7.615 mi. U.S. Rt. 30 N. Wyandot Co., to L. A. Clayton Co., 1000 Shepherd Ave., Lockland, **$125,405,** est. $137,600. Grand total **$428,-003.** Bids 8/2. CD 7/25.

Okla., Woodward—City, 15 c. conc. pavement on residential streets, to Bruce Constr. Co., 1413 Hockewelder St., Oklahoma City, **$66,120.** Est. $68,600. Bids 6/29, awarded 8/1.

Oregon—State Hy. Comm., Salem, grading, surf., oiling 3.85 mi. Douglas-Coos Co., to Bros., Eugene, **$171,015.**, Bids 8/1; grading, surf. oiling 6.45 mi. Baker Co., to E. C. Swaggart, Eugene, **$182,677.** Bids 8/2. CD 7/25.

Tex., Corpus Christi—Dr. H. C. Holsington, 410½ Peoples St., asph. paving, concrete curbs and gutters and storm sewers, to C. L. Castor, **$91 Ohio Ave., $52,201.** H & M Eng. Co., 125 N. Staples St., engrs.

Utah—State Road Comm., Salt Lake City, to Strong Co., Springville, 1 conc. 2.585 mi. U. S. Hy. 89 and 91 between North Bountiful and Farmington, Davis Co., **$277,451,** est. $280,770; plant mixed bit. 4.522 mi. between Lake Point and Mills Junction, FAP No. F-56 (11), Tooele Co., **$78,103,** est. $133,477. 3 mi. road mix bit. 8.696 mi. State Hy. between Springville and Moark, FAP F-135 (2), Utah Co., **$166,915,** est. $192,858***to L. T. Johnson Constr. Co., 709 Wall St., Ogden, 2 in. road mixed bit. surf. 9.559 mi. State Hy. between Sage Junction and Lakeview, FAP No. F-188 (11), Rich Co., **$130,200,** est. $156,371. Grand total $702,739. Bids 8/2. CD 7/26.

Washington—State Hy. Dpt., Olympia, grading, draining, surf., 5.345 mi. Secondary State Hy. 2-C, cedar to Electric City, Grant Co., to L. A. Austin, Coulee City, **$166,110****non-skid seal and light bit. surf. tr. 23.43 mi. State Hys. 5, 5-K and 12-E, Mayfield to Cora bridge, Lewis Co., to D-H Paving Co., Vancouver, **$60,886****Snoqualmie Pass, 2 in. asphaltic concrete surf., crushed cover stone and mineral aggregate on Primary State Hy. 2, Almira to Rasdad, Lincoln Co., to F. H. Stewart Co., E. 516 Baldwin St., Portland, Ore., **$52,150****, 0.694 mi. Primary State Hy. 8 at North Bonneville, Skamania, to Smith Bros., Vancouver, **$75,224*****bit., plant mix 7.25 mi. Primary State Hy. 13, Snohomish to Marysville, to Western Asphalt Co., 209 W. 39 St., Seattle, **$138,627.** Grand total $442,997. Bids 8/5. CD 7/29.

Wash., Yakima—Yakima Co., County Courthouse, b. conc. surf. 36 mi. and seal coating 15 mi. roads, to Newport Constr. Co., 7031 N. E. Halsey St., Portland, Ore., **$97,986.** Est. $100,000. CD 7/26.

Wyoming—State Hy. Comm., J. R. Bromley, supt., Cheyenne, to Taggart Constr. Co., Cody, grading, draining, base course surf., oil treatment by road mix method, 2 reinforcing, culverts, etc. S-629 (2), Hot Springs-Park County Rd., FASP S-46 (2), Hot Springs Co., **$95,429,** est. $114,770, base course surf. oil treatment by road mix method, stone chip seal coat 6.741 mi. Douglas-Glenrock Rd., SP No. 2620 **$82,941,** est. $98,000, and grading, drainage, base course surf. 5.15 mi. Douglas-Cold Springs Rd., FASP S-49 (3), **$101,111,** est. $110,577, both Converse Co., to Peter W. Kiewit Sons Co., P. O. Box 875, Sheridan, bit. 7.539 mi. Hanna Fork Rd., FASP No. S-70 (4), Lincoln Co., **$93,180,** est. $111,859***to Northwestern Eng. Co., P. O. Box 567, Denver, Colo., bit. 6.47 mi. Herrick Lake Rd., FASP No. S-21 (4), Albany Co., **$70,574,** est. $77,877***to Read Constr. Co., 706 W. 19 St., Cheyenne, surf. tr., 3 rein.-con. culverts 8,438 mi. Carpenter Rd., FASP No. S-65 (4), Laramie Co., **$100,577,** est. $111,834. Grand total $444,115. Bids 8/5. CD 7/27.

Ont., Weston—Town, G. H. Clarkson, secy., Weston, c. conc. streets, sidewalks, curbs, gutters, storm sewers, & waterworks systems, Main St. from King St. southerly to town limits, to Godson Contg. Co. Ltd., 203 Richmond St. W., Toronto. Approx. **$70,000.** E. P. Barratt, 120 Main St., engr.

EARTHWORK, WATERWAYS

BIDS ASKED

August 23

†Arkansas—U. S. Eng., P. O. Box 97, Memphis, Tenn., placing approx. 460,000 cu. yd. material in riverside enlargement of approx. 4 mi. levee along left bank of White River, Serial No. CIVENG-49-041-50-14. Extended date CD 7/26.

August 25

†Illinois—U. S. Eng., 826 U. S. Court House and Custom House, St. Louis 1, Mo., levees, Prairie du Rocher, Illinois and vicinity (Proj. Item III-A), (Edgar Lakes and Prairie du Rocher and Modoc Drainage and Levee Dist.) Randolph Co., east bank of Mississippi River, opposite approx. miles 124.5 to 128, on Mississippi River, above mouth of Ohio River, Serial No. Eng. 23-065-50-8.

On or About August 30

†Ill., Chicago—U. S. Eng., 520 Merchandise Mart, Zone 54, repairing approx. 1,250 lin. ft. Storz Arm Extn. Exterior Breakwater, Chicago Harbor, incl. removal and disposal cribbing, decking lumber.

September 1

†Arizona-California-Nevada—Bureau Reclamation, Dpt. Interior, Coachella, all-earth work, pipelines, and structures, Lateral 123.45, sublaterals and wasteway, Unit 7, reconstruction main canal, Station 6516 plus 86.70 to Station 6612 plus 00, Coachella Valley Distribution system, All-American Canal System, Boulder Canyon Proj. Spec. 2747, L. N. McClellan, Bldg. 1-A, Denver Federal Center, Denver, Colo., ch. engr.

Calif., San Diego—City, 1600 Pacific Hy., dredging in San Diego Bay, Doc. JN 404810, $500,000. Plans deposit $10. J. E. Liebmann 1040 W. Broadway, harbor engr. CD 12/6/44.

†Colorado-Kansas—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars St. Francis, Kan., gate frames for spillway at Bonny Dam, St. Francis Unit, Missouri River Basin Proj., Spec. 2754, L. N. McClellan, ch. engr.

†Montana—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point, or f.o.b. cars Coram, Tour 12x18 ft. fixed wheel gates, incl. 1 rubber brass working drifts for penstocks, Hungry Horse Dam, Hungry Horse Proj., Spec. 2748, L. N. McClellan, ch. engr.

†Mont., Fort Peck—U. S. Eng., Fort Peck, 4 hoist emergency brakes, Main Control Shaft Hoist, for 2, 3, and 4, Fort Peck, Serial No. CIVENG-2-1049.

†New Jersey—U. S. Eng., 120 Wall St., New York, N. Y., clearing, snagging, Pequannock Township Dist., Lincoln Park and Pequannock Twps., Morris Co.

†Wyoming—Bureau Reclamation, Dpt., Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Iona, at trunk line to Shoshone, Wyo., Rail L-L to Bonneville, Wyo., rail carload to Emery, Wyo., one 15x15.65 ft. bulkhead gate, frame assembly with tie bars and guides, assembled for outlet works at Boysen Dam, Boysen Unit, Missouri River Basin Proj., Spec. 2748, L. N. McClellan, ch. engr.

September 8

†Louisiana—U. S. Eng., foot Prytania St., New Orleans, timber work, timber guide walls, for Calcasieu Lock Calcasieu Parish, Serial No. CIVENG 49-047-50-35.

†Washington—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Arlan, Wash., radial gates, bearings, sills, plates, well, etc., Station 1243 plus 66, for Winchester wasteway, West Canal, radial gate, Station 1658 plus 00, lateral W-19.5 turnout bearings, plates, sills, bars, radial-gate hoists for Winchester wasteway, Station 1213, radial gate hoist for Station 941 plus 00 lateral W-17.3 hoist for check, Station 943 plus 79, hoist for turnout, Station 1658 plus 00, lateral W-19.5, West Canal, Columbia Basin Proj., Spec. 2737.

LOW BIDDERS

†Missouri and Nebraska—U. S. Eng., 170 Jackson St., Omaha, 2, Neb., Aug. 4, river and harbor work, Upper Hommies-Lower Arage Bends, Holt Co., Mo., and Richardson Co., Neb., near Craig, Mo., Serial No. Eng. 25-066-50-2, from Conner-Steffy Paving Co., 1805 Grand St., Kansas City, Mo., **$207,782.** Est. $313,227. CD 7/19.

CONTRACTS AWARDED

†Arkansas—U. S. Eng., 360 Broadway, Little Rock, enlarging, constr. roadway embankment along 5 mi. main line Mississippi River levee, Phillips and Arkansas Counties, to Driver Contg. Co., Cotton Exchange Bldg., Memphis, Tenn., **$152,520;** Bids 8/5.

†Louisiana—U. S. Eng., foot Prytania St., New Orleans, approx. 25,000 cu. yd. uncompacted levee embankment, Item M-28-3-R, Sunrise Levee, Barataria Levee Dist., Mississippi River Flood Control Project, Serial No. Eng. 49-047-49-323, to Forcum-James Co., Dyersburg, Tenn., **$76,400.** Bids 7/14. CD 7/6.

†Mississippi—U. S. Eng., P. O. Box 60, Vicksburg, upper bank paving, several locations, Mississippi River between mouths of old River (Mile 505.5 AHP) and mouth of Arkansas River (Mile 575 AHP), Serial No. Eng. 22-052-49-227, to Mississippi Valley Eng. & Constr. Co., and The Massman Constr. Co., 726 Alabama St., Memphis, Tenn., **$998,775.** Bids 7/6. Awarded 7/22. CD 7/22, under LB.

Tex., Dallas—M. H. Guilfoil1814 Cadiz St., ditching and retaining wall, day labor, **$33,000.**

G. Gill, 1913 San Jacinto St., engr. CD 10/15/47, under LB.

†Washington—U. S. Eng., 19 E. Poplar St., Walla Walla, 2.7 mi. levees along north bank Yakima River and along west bank of Columbia River in vicinity of Richland, Benton Co., Serial No. Eng. 45-164-49-120, to Parker-Schram Co., N. E. Ualy and Columbia Sts., Portland, Ore., **$417,802.** Est. $425,743. Bids 8/2. CD 6/16.

Wis., Neillsville—Clark Co., Neillsville, dam, to Ernest & Ben Gottschalk, Edgar, **$28,221.** Bids 7/15, awarded 7/26. CD 7/6.

Saskatchewan—Government of Canada, Hunter Bldg., Ottawa, Ont., dam on Cowan Creek, to Bird Constr. Co. Ltd., Seventh St., Regina, **$63,323,** W. J. Johnstone, 9937 102 St., Edmonton, Alta., engr. CD 8/20/45.

AIRPORTS AND AIRBASES

BIDS ASKED

August 30

†Ill., Belleville—FLIGHT HAZARD REMOVAL—U. S. Eng., 220 Merchandise Mart, Chicago, Zone 54, removal flight hazards, etc., Scott Air Force Base, Serial No. Eng., 11-032-50-5.

August 31

†Va., Chincoteague—PARACHUTE LOFT—P. W. ks Office, Headquarters Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, parachute loft at Naval Auxiliary Air Station, Spec. 22996.

September 1

†Tex., Fort Worth—PARKING AREA—Carswell Air Force Base, Maj. John L. Morris, Officer in Charge of Contracting and Purchasing, Fort Worth, addnl. aircraft parking area, 32,500 tons hot asphaltic concrete paving mixture.

†Alaska — UTILITIES — Birch - Johnson-Lytle, P. O. Box 1943, Seattle, Zone 11, Wash., approx. 2 mi. 13.2 KV underground transmission system, 200 KVA sub-station, approx. 1,500 to 2,500 2,400 volt distr. sys., Inv. DEF 15; and roads, streets, drainage, Inv. DEF 16, at Fort Richardson, near Anchorage; sewage plant, water treatment plant Ladd Air Force Base, near Fairbanks, Inv. DEF 17; fire protection facilities, Elelson Air Force Base, near Fairbanks, Inv. DEF 18; for U. S. Eng., Anchorage, Plans deposit $25.

SOON LETS CONTRACT

La., New Orleans—HANGAR—N. J. Bedell, engr., 840 Union St., soon lets contract 14x60x60 ft. hangar at New Orleans Airport, for Pan American Petroleum Corp., 944 St. Charles St. Plans deposit $10.

LOW BIDDERS

Ky., Louisville—APRON—City County Air Bd., Standiford Field, Louisville, Aug. 5, apron for Standiford Field, from Breslin Constr. Co., 1801 S. Brook St., **$190,175.** CD 7/25.

CONTRACTS AWARDED

†Tex., Fort Worth—RUNWAY—U. S. Government, Contr. Officer, Carswell Air Force Base, Fort Worth, runway gravel base and area graveling. Purchase and Hire. **$110,000.**

LATIN AMERICA

Mexico, Cuidad Juarez—City, Carlos Villarreal, pres., City Council, timber and concrete international bridge across Rio Grande. Owner builds. **$90,000.**

PUBLIC BUILDINGS

BIDS ASKED

August 23

N. Y., White Plains—FIREHOUSE—Dpt. P. Wks., City Hall, firehouse, $123,000. Theodore Richards, 31 Mamoroneck Ave., White Plains, archt.

August 24

N. Y., New York—WELFARE CENTER—Dpt. P. Wks., Municipal Bldg., Zone 7, general contract, plumbing, heating and ventilating, electrical work, incl. lighting fixtures and elevators; for altering P. S. 12 at 108 St. to E. 109 St., east of 2 Ave., for use as a welfare center. Plans deposit $25.

August 25

Mass., Boston—PARKING STRUCTURES—City of Boston, Bd. R. E. Comrs., Irving Lewis, chn. Unit 1, parking structure, Essex, Lincoln and Columbia Sts., $460,000. Plans deposit $50. Thomas Worcester, Inc., 84 State St., Boston, engr.

Ont., Timmins—SCHOOL—Mrs. F. M. Springham, 26 Third Ave., 100x200 ft., concrete, brick school, for P. School Bd., Timmins. Plans deposit $25. S. B. Cook & Co., 44 St. Thomas St., Toronto, archts. CD 9/3/47.

Sask., Lloydminster—HOSPITAL—Secy. Hospital Bd., Lloydminster, hospital. Plans deposit $50. Rule-Wynn & Rule 11422 Jasper Ave., Edmonton, archts. CD 12/27.

August 26

Mass., Walpole—HOUSES—Town of Walpole Housing Auth., L. Tetreault, chn., 944 Main St., Unit 1, 8 story, 8 unit, 1 bdrm. Veterans Housing Proj. 200-1, Robinwood St., $460,000. Plans deposit $50. Phicol Corp., 45 Bromfield St., Boston, archt.

N. C., Greensboro—ECONOMICS—University of North Carolina, Women's College, Greensboro, home economics bldg. Plans deposit $25. Northrup O'Brien, Winston-Salem, archts.

August 30

Calif., Quincy — SCHOOL—Plumas County Unified School Dist., Quincy, 9 classroom frame Quincy Elementary School. $318,000. Plans deposit $20. Leonard F. Starks, Native Sons Bldg., Sacramento, archt.

Mass., Quincy—HEALTH CENTER—City, P. Wks. Office, City Hall, 61 Saville Row, 2 story, bsmt., 38x132 ft. and 32x36 ft. health center, Hancock St. between Johnson Ave. and Woodward School. Approx. $300,000. Plans deposit $50. CD 11/17.

O., Columbus — OPTOMETRY — The Ohio State University, Columbus, 2 story, 50x150 ft., brick, sandstone school of optometry. $300,000. Plans deposit $15. H. D. Smith, c/o owner, archt.

Tex., Fort Worth — HIGH SCHOOL—Fort Worth Independent School Dist., Fort Worth, Arlington Heights High School addn. $250,000. Preston M. Geren, N. P. Anderson Bldg., archt. CD 7/21.

Wash., Seattle — FISHERIES CENTER—University of Washington, E. 45 St. and 17 Ave. N. E. Zone 5, 216x290 ft. reinforced Fisheries Center. Approx. $250,000. Plans deposit $50 general, $25 for mechanical and electrical work. Young & Richardson, Central Bldg., Zone 4, archts.

August 31

Mass., Leominster — HOUSING — City of Leominster Housing Auth., Leominster, 74 unit veterans housing Proj. 200-1. Approx. $740,000. Plans deposit $100. H. E. Mason, 53 Merriam Ave., archt. CD 9/27.

Mass., Lynn—HOUSES—City of Lynn Housing Auth., J. Cavannagh, chn., 58 Andrews St., four 2 story bsmt., brick bldgs., incl. 48 family units, Veterans Housing Proj. 200-3, Green and Howard Sts. Approx. $480,000. Plans deposit $100. A. E. Cornet, 194 Lynn Shore Dr., archt. CD 2/18.

O., Orrville—HOSPITAL—Orrville Hospital Bd. Trustees, Orrville, 2 story 41 bed, brick, steel hospital, S. Main St. $450,000. Plans deposit $25. Wagner & Luxmore, 200 Permanent Bldg., Akron, archts. Frank Eraskey & Assoc., 927 Rose Bldg., Cleveland, structural archts. John Paul Jones Cary & Miller, 1740 E. 12 St., Cleveland, mechanical engrs. CD 8/3/45.

Ont., Owen Sound—SCHOOL—A. G. Rutherford, secy., 230 Ninth St., 1 story, bsmnt., 64x115 ft., concrete, steel, brick school, for Bd. Educ., Owen Sound, J. Layne, 120 W. Bloor St., Toronto, archt. CD 4/15/47.

September 1

Ind., Butlerville—POWER HOUSE—State of Indiana, P. Wks. & Supply Div., W. R. Mybeck, dir., State House, Indianapolis, 1 story, 31x88 ft. and 18x41 ft. brick, reinforced steel power house addn., Muscatack State School. $100,000. Plans deposit $25. McGuire & Shook, 1400-01 Fletcher Trust Bldg., Indianapolis, archts. Bevington, Taggart & Fowler Inc., 730 Indiana Pythian Bldg., Indianapolis, engr. CD 5/29/47.

September 2

Ala., Fort Payne—COURTHOUSE, etc.—DeKalb Co., Fort Payne, courthouse and jail. Extended date. Sherlock, Smith & Adams, 301 Washington Ave., Montgomery, archts. CD 4/20/48.

‡Oregon—BUILDING—U. S. Eng., 628 Pittock Block, Portland, Zone 5, remodeling bldg. to provide testing laboratory at Troutdale, near Portland. Serial No. CIVENG-35-026-50-42.

Tex., Stephenville—SCIENCE—John Tarlton College, Stephenville, 3 story science bldg. Approx. $250,000. Plans deposit $15. Carlton W. Adams, College Station, archt. CD 10/6/47, under Commercial Buildings.

September 5

Mass., Kingston — SCHOOL — Town, Supt. Schools, High School, 1 story, brick, steel school. Approx. $250,000. Plans deposit $25. Bogner & Richmond, 1320 Massachusetts Ave., Cambridge, archts. CD 11/24.

September 6

‡Ill., Chicago—HOSPITAL—Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash. 25, D. C., general medical surgical hospital, 13 corridor steel side. Spec. 4820-A Proj. No. 4-4126. Extended date. CD 7/11.

N. Y., Hollis—SCHOOL—Supt. School Buildings, Design & Construction, 49 Flatbush Ave. extn., Brooklyn, Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical and lathing work for Proj. P. S. 178, Radnor Rd. to Avon Rds., north of 188 St. Plans deposit $18, general contract. Plans denied 37 others. CD 10/21/49.

Oregon—RESIDENCES, etc.—U. S. Eng., 628 Pittock Block, Portland, Zone 5, constructing Types A, B, C, and D and E residences and garages, incl. sanitary sewerage sys., electrical distr. sys., etc. in permanent housing area at Detroit Dam, on North Santiam River near Mill City. Serial No. CIVENG-35-026-50-52.

September 7

●Va., Winchester — HOSPITAL — Winchester Memorial Hospital, Winchester, hospital alterations, addn. $1,250,000. York & Sawyer, 347 Park Ave., New York 17, N. Y., archts. CD 5/29/48.

September 8

‡Ala., Birmingham — HOSPITAL — U. S. Eng., P. O. Box 1169, Mobile, Zone 7, 500 bed general medical veterans administration hospital, for Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash., 25, D. C. Extended date. CD 6/3.

‡Arizona—PUMP CONNECTIONS—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Yuma, pump connections, incl. couplings, for Pumping Plants 12, and 3, Wellton-Mohawk Division, Gila Proj., Spec. 2761. L. N. McClellan, ch. engr.

Tex., Houston—SCHOOL—Houston Independent School Dist., 1600 Washington St., 21 classroom elementary and kindergarten school, Sharman and Wynne Sts., in Jefferson School area. $550,000. Stayton Nunn, 2425 Ralph St., co-ordinate archt. H. Voelcker & Assoc., 1202 Dennis St., engrs. CD 6/23/47.

‡Washington—FANS, etc.—Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars at Odair, Wash., motor-driven fans, damper, registers, grilles, diffusers, filters, for Grand Coulee Power Plant, Columbia Basin Proj. Spec. 2749. L. N. McClellan, ch. engr.

September 9

Fla., Winter Haven—YOUTH CENTER—City youth center.

September 13

Tex., Houston — SCHOOL — Houston Independent School Dist., 1600 Washington St., masonry Garden Oaks School, concrete slab fdn. $400,000. Stayton Nunn, 2425 Ralph St., co-ord. archt. Wilson, Morris & Crain, 3340 Graustark St., engr. CD 6/23/47.

Va., Fredericksburg—BOILER PLANT—Mary Washington College of the University of Virginia, Fredericksburg, boiler plant bldg. Plans deposit $20. J. Binford Walford, O. Pendleton Wright, 102 East Cary St., Richmond, archts. CD 10/21/44.

About September 14

●N. M., Alamogordo — QUARTERS—U. S. Eng., P. O. Box 1538, Albuquerque, family quarters (Holloman AFB-A-91C), Serial No. Eng.-29-005-50-12.

September 14

Ia., Cedar Falls—DORMITORY—State Bd. Educ., Des Moines, womens dormitory, State Teachers College. $500,000. Nemmers, Clark & Spooner, Masonic Temple, Des Moines, archts. CD 7/7.

●‡N. M., Albuquerque — HOSPITAL — U. S. Eng., Box 1538 Albuquerque, 150 bed hospital, Sadia Base. Serial No. Eng. 29-055-50-1. $2,000,000. Bid date changed. CD 8/2.

Ont., Sault St. Marie—ARMOURY—J. D. McCarthy, c/o Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., armoury. Approx. $800,000. G. Brault, Dpt. P. Wks., Ottawa, archt. CD 6/20.

September 15

●‡N. M., Albuquerque — HOSPITAL — U. S. Eng., P. O. Box 1538, 2 and 3 story, 150 bed concrete frame, masonry panels hospital, Sadia. No. Eng.-29-005-50-1. Approx. $2,000,000.

‡S. C., Columbia—REGIONAL OFFICE—At office Custodian, U. S. Court House, Columbia, 5 story L shaped, 48x173 ft., brick, tile Veterans Admin. Regional Office Bldg., Laurel and Assembly Sts., for Pub. Bldgs. Admin., General Services Admin., 18 and F Sts., N.W., Wash., D. C. Deposit $15. CD 4/25.

Tex., Houston — SCHOOL — At office H. L. Mills, supt. Houston Independent School Dist., 1600 Washington St., Garden Oaks school addn. Sue Barnett St. Extended date. Wilson Morris & Crain, 3340 Graustard St., archts. CD 8/1.

September 20

‡Md., Baltimore — U. S. Eng., P.O. Box 1715 24 St. and Maryland Ave., Baltimore, Zone 3, Veterans administration, quarters, service bldgs. and Utilities. Plans deposit $50., Serial No. Eng. 18-020-48-57. CD 7/31.

On or About September 21

‡Calif., Los Angeles — TERMINAL — Pub. Bldg. Admin., P. St. between 18 and 19 Sts. N. W., Wash., D. C., addnl. story to U. S. Post Office Terminal Annex. $500,000-$750,000. CD 10/16/45.

September 22

Tex., Houston—SCHOOL—At office H. L. Mills, supt. Houston Independent School Dist., 1600 Washington St., school, San Felipe-Post Oak Roads, San Felipe and Voss Rds. Claude E. Hooton & Harry A. Turner, 2502 Robinhood St., archts. CD 1/5.

October 3

Calif., El Centro — JAIL — Imperial Co., El Centro, jail addns., alterations, incl. 2 prison wings, dormitories, etc. $250,000. Frank C. Hyde, El Centro, archt.

October 11

‡Calif., San Fernando — CHAPEL—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash., 25, D. C., Chapel Bldg., 52 bed Veterans Administration Hospital, Spec. 4931, Proj. No. 2934. Plans deposit $50.

On or About November 1

●Miss., Meridian—HOSPITAL—State of Mississippi, Jackson, East Mississippi State Hospital, $1,225,000. Chris Risher, Vice Bldg., archt. CD 11/17.

After January 1

●Tex., Houston—COURTHOUSE—Harris Co., Glenn Perry, judge, Courthouse, courthouse, $6,000,000. Finger & Rustay, 711 National Standard Bldg., archts. CD 12/8/48.

Bids Asked

Va., Charlottesville — LABORATORIES—At office Colgate W. Darden, Jr., pres. University of Virginia, Charlottesville, chemical engineering and high voltage laboratories. $300,000. Baskervill & Son, 2313 W. Cary St., Richmond, archts. Eggers & Higgins, 342 Fifth Ave., New York, N. Y., assoc. archts. CD 7/6/45.

LOW BIDDERS

Conn., Storrs—DORMITORIES—State, Raymond Thatcher, comptroller, 114 State Capitol, Hartford, dormitories, Storrs Hall and Koons Hall alterations, from Coleman Constr. Co., Providence, R. I., **$367,887.**

Ga., Atlanta—HEALTH CENTER—City, Aug. X health center, from Henry A. Ivey, Inc., 569 Plum St. N.W., **$353,991.** CD 7/15.

Ill., Oak Lawn—SCHOOL—Ind. Educ., Oak Lawn, July 19, 2 and 3 story, 150x330 ft., concrete, brick, stone high school, from Peterson Constr. Co. 124 N. Wells St., Chicago, **$100,000.** Est. $100,000. CD 7/14.

Ind., Bedford — HOSPITAL—Trustees Dunn Memorial Hospital, Bedford, Aug. 5, hospital addn., from I. Bush & Sons, 1531 S. First St., Louisville, Ky., **$325,265.** CD 7/21.

Ia., Latimer—SCHOOL—Consolidated School Dist., B. F. Dohrmann, secy., rejected bids June 7, brick, concrete school bldg., near here. **$300,000.** Will readvertise. CD 5/25.

Ky., Bowling Green—SCHOOL—Warren Co., Bowling Green, high school, south of here, from Lee C. Miller, 333 E. Bloom St., Louisville, **$285,980.** CD 7/20.

La., Baton Rouge—CHEMISTRY—Louisiana State University, Baton Rouge, Aug. 5, chemistry bldg. addn., from Horace B. Rickey, Inc., Lafayette, **$648,000.** CD 7/11.

Mass., Falmouth—HOUSING—Town of Falmouth Housing Auth., J. Silvia Jr., Chm., Aug. 5, veterans housing, Gifford St., from A. F. Smiley Constr. Co., 195 Trenton St., Pawtucket, R. I., **$440,000.** CD 7/28.

Mass., Swampscott — HOUSING — Swampscott Housing Auth., J. A. Hegarty, chm., Swampscott, Aug. 5, veterans housing, Cherry St. off Essex St., from Cromwell Constr. Co., 50 Calumet St., Roxbury, **$321,160.** CD 7/21.

●‡Mich., Ann Arbor—HOSPITAL—Veterans Admin., 1807 Munitions Bldg., Vermont Ave. between H. and I Sts., N. W., Wash. 25, D. C., Aug. 9, hospital, Spec. 4820, from Hedin Constr. Co., 520 Michigan Ave. N. E., Washington, D. C., **$7,250,000.** CD 6/23

N. Y., Oneonta—DORMITORY, etc.—New York State Dormitory Auth., Albany, July 26, general contract dormitory and residence hall, from Thompson Constr. Co., 11 N. Pearl St., Albany, **$2,450,000.** CD 7/14.

●N. Y., Oswego—DORMITORY, etc.—New York State Dormitory Auth., State Educ. Bldg., Albany, July 14, general contract dormitory and residence hall, from William E. Bagley & Co., 48 Genesee St., Auburn, **$1,075,000.** CD 6/28.

N. Y., Potsdam—RESIDENCE HALL, etc.—New York State Dormitory Auth., Albany, Aug. 4, general contract residence hall and facilities bldg., from Nicholl & Morrissey, Plattsburg, **$715,051.** CD 7/7.

‡Oklahoma—BUILDINGS, etc.—U. S. Eng., P. O. Box 61, Tulsa, July 19, bldgs. and allied appurtenances at Tenkiller Ferry Reservoir near Gore, from The Delmare-Dickmann-Pickens Constr. Co., Muskogee, **$103,544,** est. $102,814.

Tex., Deer Park—HIGH SCHOOL—Deer Park Independent School Dist., Deer Park, Aug. 4, masonry, steel, concrete, structural steel high school addn., from Schmidt & Morrissey, Plattsburg, **$715,051.** CD 7/7.

‡Oklahoma—BUILDINGS, etc.—U. S. Eng., P. O. Box 61, Tulsa, July 19, bldgs. and allied appurtenances at Tenkiller Ferry Reservoir near Gore, from The Delmare-Dickmann-Pickens Constr. Co., Muskogee, **$103,544,** est. $102,814.

Tex., Deer Park — HIGH SCHOOL — Deer Park Independent School Dist., Deer Park, Aug. 4, masonry, steel, concrete, structural steel high school addn., from Schmidt & Morrissey, Plattsburg, **$715,051.** CD 7/7.

Tex., Houston—SCHOOL—Houston Independent School Dist., 1600 Washington St., Aug. 4, Grace Heights at Underwood St., from Marshall Constr. Co., 4003 Center St., **$300,730.** CD 7/18.

Wis., Winnebago BOILER PLANT—State Dpt. of Welfare, Madison, Bldg. 28, general contract boiler plant, from Edward H. Meyer Constr. Co., 75 Main St., Oshkosh, **$230,780.** CD 6/29.

CONTRACTS AWARDED

Calif., Burbank—SCHOOL—Burbank Unified School Dist., 245 E. Magnolia Blvd., 1 story, frame, stucco classroom bldg., auditorium, cafeteria library, Jefferson School, to Gallinger Constr. Co., 1209 W. 190 St., Gardena, **$256,-378.** Awarded 8/2.

Ill., Chicago — HOSPITAL — Bd. Comrs., Cook Co., County Bldg., general contract remodeling county hospital, to M. J. McDermott Co., 20 N. LaSalle St., **$519,200.** Raymond F. Erickson, 20 N. LaSalle St., archt.

●Md., Cheverly—HOSPITAL—Prince Georges General Hospital, Cheverly, brick, stone, concrete, steel hospital wing, power plant, and wing addn., to R. & J. Constr. Co., 3422 Connecticut Ave. N. W., Wash., D. C., **$1,101,597.** CD 5/8, under LB.

Pa., Aspinwall—LIGHT PLANT—Aspinwall Boro. Boro Bldg., light plant improv., remodeling disposal present boiler room and generating room equip., installing diesel power plant, to Worthington Pump & Machine Co., Keppers Bldg., Pittsburgh, **$239,950.**

Tex., Deer Park — HIGH SCHOOL — Deer Park Independent School Dist., Deer Park, general contract masonry, steel, concrete Junior-Senior High School, concrete slab fdn., to

Farnsworth & Chambers, P. O. Box 74, Houston, **$525,000.** Bids 8/4. CD 8/11, under LB.

●**Tex., Terrell**—DORMITORY WINGS—State Rd. Comrsd. Hal Logan, chn., Austin, masonry, steel, concrete state hospital dormitory wings. T. P. O'D. Montgomery, P. O. Box 923, Dallas. **$1,507,272.** Est. $1,300,000. Bids 7/5. CD 5/10, under LB.

●**W. Va., Charleston**—HOSPITAL—Charleston Memorial Hospital, c/o contractor, hospital, to Thompson & Street Co., Charlotte, N. C. **$2,329,000.** CD 6/9.

Wis., Wisconsin Rapids—PLANT—Waterworks & Lighting Comn., iron removal plant, to Edward H. Meyer Constr. Co., 75 Main St., Oshkosh. **$86,999.** Bids 8/1.

●**Man., Camp Shilo**—HOUSING—Central Mortgage & Housing Corp., 70 Lyon St., Ottawa, Ont., 300 houses, to Bird Constr. Co., Ltd., 7 Erwin St., Winnipeg. Approx. **$2,000,000.** H. C. Spence, 400 Kensington Bldg., Winnipeg, engr.

Man., Rivers—HOUSING—Central Mortgage & Housing Corp., 70 Lyon St., Ottawa, Ont., 100 houses, to Shoquist Constr. Ltd., Toronto Trust Bldg., Saskatoon, Sask. **$535,000.** Bids 7/20. H. C. Spence, 400 Kensington Bldg., Winnipeg, engr. CD 7/14.

N. B., Petitcodiac—SCHOOL—School Trustees, Petitcodiac regional high school, to Green & Fleming, Woodstock. Approx. **$250,000.** J. S. Roy, Moncton, archt. CD 11/12.

Ont., Scarborough—GENERATOR STATION—Hydro-Electric Power Comn. of Ontario, 620 University St., Toronto, hydro sub-station, to Foundation Co. of Ontario, Ltd., 1220 Day St., Toronto. Approx. **$300,000.** Bids 5/14. CD 5/9.

COMMERCIAL BUILDINGS

BIDS ASKED

August 29

●**B. C., Vancouver**—BANK—McCarter & Nairne, archts., 1930 Marine Bldg., 3 story, basmt., 75x150 ft., to cost over $1 Mil., for Dominion Bank, 207 W. Hastings St. Approx. $1,000,000. CD 1/27.

August 30

W. Va., Parkersburg—SCHOOL—St. Francis Xavier Roman Catholic Congregation, Parkersburg, 2 story, basmt., 114x129 ft., brick parochial high and grade school, wall bearing, steel joist concrete slab floor and roof constr. $300,000. Ramsey & Crose, 6 W. Francis Ave., Columbus, O., archts. CD 5/2.

About October 15

N. C., Greensboro—OFFICE—J. P. Stevens & Co., c/o C. C. Hartman, archt., Greensboro, office, $500,000. CD 8/8.

Bids Asked

Ill., Chicago—APARTMENT—Irving M. Karlin, archt., 9 E. Huron St., 3 story, English bsmnt., 125x125 ft. concrete, brick apartment, incl. 30 suites. Hollywood and Christiania Sts., Zone 45, for Hollywood Plaza Apartment Bldg. Corp., c/o archt. $350,000.

SOON LETS CONTRACT

Ill., Chicago—SCHOOL—St. John-Fisher Parish, c/o Barry & Kay, archt., 53 W. Jackson St., soon lets contract 2 story, brick, steel, concrete, stone school.

Mass., Leominster—THEATRE—Leominster Recreational Assn., Inc., H. Kashanah, chn., Bldg. Comn., 75 Water St., soon lets contract Rialto Theatre alterations, 55 Main St. Approx. $250,000. Plans deposit $35. H. E. Mason, 53 Merriam Ave., archt. CD 8/1.

CONTRACTS AWARDED

Ala., Huntsville—APARTMENT UNITS—College Hills, Inc., c/o Charles R. Smiley, archt., Selma, 50 apartment units, owner builds. Approx. **$250,000.** CD 7/20.

Calif., Daly City—RESIDENCES—Henry Doelger, 320 Judah St., San Francisco, 36 residences in Westlake No. 1 Tract. Owner builds. **$370,800.**

Fla., Sarasota—HOMES—M. C. Lucas, Sarasota, 32 homes in Franklin Manor. Owner builds. **$750,000.**

Ind., Greencastle—STUDENT UNION—DePauw University, Bd. Trustees, Greencastle, students union bldg., to Leslie Colvin, 507 Bd. Trade Bldg., Indianapolis. Approx. **$600,000.** Bids 7/29, awarded 8/5. CD 7/15.

Md., Baltimore—HOUSING—Edmondale Bldg. Co., Munsey Bldg., fifty 2 story brick dwellings, 1100-1116 N. Augusta Ave., 1101-1117 N. Augusta Ave., 4100-4114 N. Rokeby Rd., 4101-4111 Rokeby Rd., 4101-4117 Glenhunt Rd., 4100-4116 Glenhunt Rd., separate contracts. **$350,000.**

O., Bedford—HOMES—Squires Bldg. Co., 2166 Fairhill Rd., 50 one and half story, no bsmnt., 24x29 ft. frame homes, N. West Glendale and Ledgewood Rds., separate contracts. **$412,000.**

O., Toledo—SUPER MARKET—Big Bear Stores Co., 770 W. Goodale Bldg., Columbus, 1 story, bsmnt., 170x230 ft., brick, concrete super-market, air-conditioning, etc., Monroe St. at Oatis Ave., to A. Bentley & Sons Co., 201 Belmont St., Approx. **$275,000.** Awarded 8/5.

Pa., Chesterol—APARTMENTS—Maple View Apartments, Inc., 408 Fallowfield Ave., three 3 story, bsmnt., 48x132 ft., brick, block apartments, wall bearing, steel joist floor and roof constr., to James Bros. Constr. Co., Terrace Rd., McKeesport. Approx. **$380,000.** CD 5/12.

Pa., Phila.—RESIDENTIAL DEVELOPMENT—Denmax Corp., 20 S. 15 St., residential development, Longshore and Montour Sts., separate contracts. **$250,000.**

Pa., Pittsburgh—APARTMENT—Dell McFarland Corp., Union St., Bridgeville, two 3 story, bsmnt., 43x116 ft. brick, block apartment and 39x89 ft. garage, to Mac & Mac, 757 Shady Lane, Mt. Lebanon, Pittsburgh. Approx. **$250,000.** Phillip Freedman, 121 St. Negley St., Pittsburgh, archt.

Pa., Pittsburgh—APARTMENT—Samuel Tisherman, 1231 5 Ave., 3 story, bsmnt., brick apartment, wall bearing, steel joist reinforced slab floor and roof constr., to Phillip Boyle & Son, 4225 Lydes St., Approx. **$250,000.** W. C. Young, 111 Dethridge St., Standard Life Bldg., archt.

R. I., Warren—HOUSING—Kelly Corp., Joseph F. Kelly, Arlington, Mass., 50 duplex units, 100 family, frame housing, Market St., owner builds. Approx. **$850,000.** CD 8/9.

S. C., Charleston—THEATER—Albert Sottile, Riviera Theater Bldg., theater, to Liberty Constr. Co., 35 Broad St., Charleston. Approx. **$250,000.**

Tenn., Nashville—APARTMENT DEVELOPMENT—First Mortgage Co., 410 Union St., apartment development, to J. E. Crain & Co., 302 42 Ave. N. Approx. **$250,000.**

Tex., Dallas—THEATRE—Harley Sadler, Sweetwater, theatre, Lake June Rd., own forces. **$265,000.** CD 4/1.

●**Tex., Dallas**—DORMITORY, etc.—Southern Methodist University, Mockingbird Lane, addnl., rein.-con. stone, brick dormitory and addnl. classroom bldg., administration offices for law school and legal center, to Henger Constr. Co., Dallas Natl. Bank Bldg. **$650,000** and **$800,000** respectively. Awarded 7/13. CD 11/7/47.

Tex., Fort Worth—CHURCH—Broadway Baptist Church, c/o Dr. Guy Moore, pastor, 305 W. Broadway, general contract sanctuary, to A. J. Rife Constr. Co., 2608 Inwood St., Dallas. **$807,119.** Bids 7/26. CD 7/23, prob. LB.

●**Tex., Houston**—MERCANTILE—S. H. Kress Co., Kress Bldg., general contract 8 story, bsmnt., steel, masonry mercantile bldg., concrete pier and beam fdn., Fannin and Capitol Sts., to Frank Messer & Sons, Inc., 4612 Paddock Way, Cincinnati, O. Approx. **$2,000,000.** (**Correction**—name of contractor). CD 8/9, under CA.

Wash., Seattle—HOUSES—Modern Homes, Inc., 3849 34 Ave., W., 26 houses, near W. Kadota St. and 50 Ave. S.W., day labor **$250,000.** CD 6/27.

Ont., Toronto—SCHOOL—Roman Catholic Episcopal Corp., Avenue Rd., school, to George Hardy Ltd., 183 Wellesley Ave., Approx. **$690,000.** Bids 8/4. J. H. Haffa, 26 W. Bloor St., archt. CD 7/21.

INDUSTRIAL BUILDINGS

BIDS ASKED

August 29

Ont., Galt—PLANT—Barnett & Rohler, archts., 300 Bessborough Dr., Toronto, 2 story, bsmnt., 85x120 ft., concrete, brick, steel newspaper plant, Ainslie St. S. between Ridsdale & Bailey and Hamilton Spectator, for Galt Daily Reporter, 24 Water St. W. Approx. $150,000. CD 8/28/47.

Bids Asked

Ont., St. Catherines—T. R. Wiley, archt., 32 William St., 120 x 180 ft. and 47 x 200 ft. concrete, steel, brick I-shaped addns. to Bldgs. 12 and 16, for McKinnon Industries Ltd., St. Catherines. Approx. $175,000.

SOON LETS CONTRACT

Ala., Tuscaloosa—PLANT—The Weatherford Printing Co., Tuscaloosa, soon lets contract printing plant. Don R. Schuyler, Tuscaloosa, archt.

N. Y., Long Island City—WAREHOUSE, etc.—McKesson & Robbins, Inc., 155 E. 44 St., New York, Zone 17, soon lets contract warehouse and office, $500,000. Chapman, Evans & Delehanty, 59 Broadway, New York, archts. CD 7/28.

LOW BIDDERS

Nev., Reno—BUS LOADING PLATFORM—Pacific Greyhound Lines, Pine and Battery Sts., San Francisco, Calif., 14,600 sq. ft. reinforced steel bus loading platform, from Ballet Bros. Constr. Co., Post St., San Francisco, Calif., **$137,000.** CD 5/26.

CONTRACTS AWARDED

Calif., East Los Angeles—WAREHOUSE, etc.—Manch-Hill Corp., 270 W. 7 St., Los Angeles, 21,500 sq. ft. warehouse and office, to Howard Hastings, 1135 N. Las Palmas St., Los Angeles. **$140,000.** Stiles Clements, Van Nuys Bldg., Los Angeles, archt.

Calif., San Francisco—WAREHOUSE, etc.—Alemite Co. of Northern California, 601 Turk St., 1 story 30,000 sq. ft. steel, concrete warehouse and assembly plant, to Cutting Co., 702 El Camino Real, San Carlos. Approx. **$250,000.**

Conn., Portland—CANNERY—Perry Bell Fish Co., Coleran, N. C., 1 story, 30 x 40 ft., 1 story, 35 x 60 and 1 story, 100 x 120 ft. cinder block fish cannery, Indian Hill Ave., owner builds. **$70,000.**

Fla., Davenport—PLANT—Holly Hill Fruit Products Ind., Holly Hill, plant. Owner builds. Approx. **$100,000.**

Neb., Hastings—WAREHOUSE—Fred Rutt, Hastings, warehouse, to Kealy Constr. Co., Hastings. **$75,000.** Pittsburgh Plate Glass Co., lessee. Mark Evans Hastings, archt.

O., Cleveland—PLANT—Dairy Pak, Inc., 5250 Broad Park Rd., 1 story, no bsmnt., brick plant addn., concrete floor, to Tousch & Green Constr. Co., 4100 Brookpond Rd. Approx. **$100,000.**

Okla., Oklahoma City—WAREHOUSE, etc.—T. & Y. Stores, 825 Broadway, Zone 2, 220 x 320 ft. warehouse, 36 and Santa Fe Sts., to Charles M. Settle Co., 12 N. W. 8 St., Zone 2. **$189,600.** Bids 8/1, awarded 8/3. CD 7/12.

Tex., Abilene—PLANT—West Texas Utilities Co., Abilene, utilities plant addn., own forces. Approx. **$141,000.** C. H. Young, c/o owner, ch. engr. CD 4/7/47.

Tex., Dallas—GARAGE—Kate E. & J. R. Bower, Jr. and Dunlap-Swain Co., 2009 Pacific St., parking garage, to Burcher Constr. Co., 3927 Main St. **$75,000.** J. A. Pitzinger & Assoc., Southland Life Bldg., archts.

Tex., Dallas—INDUSTRIAL—S. G. Pappas, Bluefield, W. Va., industrial bldg., to Williams & Wagner Constr. Co., 8515 Preston Rd. Approx. **$95,000.** CD 1 16/48.

Tex., Dallas—WAREHOUSE, etc.—L. M. Taylor & Co., 2112 N. Lamar St., and Taylors Inc., 2112 N. Lamar St., warehouse, service shop, to Williams & Wagner Constr. Co., 8515 Preston Rd. Approx. **$75,000.**

Tex., Fort Worth—GRAIN ELEVATOR—Kimbell Milling Co., 22 S. Main St., 2,000,000 bu. concrete, steel grain elevator, to James McDuffie, Texas Hotel. **$250,000.** Jones-Hetteisaer, 1911 Baltimore St., Kansas City, Mo., engrs.

Tex., Houston—WAREHOUSE—Hamilton Huster Mchy. Co., 1109 Patterson St., Dallas, machinery warehouse, to Murphy Constr. Co., 1109 Patterson St. **$70,000.**

Tex., Houston—LUMBER YARD—West End Lumber Co., 2300 Yale St., lumber yard, owner builds. **$75,000.**

Tex., Houston—PLANT—White Motor Co., 3615 Harrisburg St., mfg. plant unit, own forces. Approx. **$90,000.**

Tex., Kelsey—PLANT—Humble Oil & Refining Co., 1216 Main St., Houston, gas injection plant unit, own forces. **$235,000.** CD 7/16.

Tex., Kerrville—WAREHOUSE—Schreiner Wool & Mohair Warehouse Co., Kerrville, wool and mohair warehouse, own forces. **$80,000.** CD 4/7/48.

Tex., Pearland—GARAGE, SERVICE, etc.—R. V. Kliesing, Pearland, auto repair garage, service and storage, own forces. Approx. **$80,000.**

Tex., Port Arthur—SHOP—D. M. Picton Towing Co., Port Arthur, marine repair shop unit on 20 acre tract east of Lakeview area, own forces. **$85,000.** CD 12/3/48.

W. Va., Triadelphia—SHOP, etc.—Valley Camp Coal Co., Western Reserve Bldg., Cleveland, O., 1 and 2 story, irregular shape, 138 x 180 ft., brick machine shop 60 x 140 ft., and warehouse, 80 x 110 ft., to H. L. Seabright Co., 43 and McCulloch Sts., Wheeling. Approx. **$300,000.** CD 7/26.

B. C., New Westminster—MILL—Alaska Pine Co., Ltd., 4 Ave. and 15 St., 2 story, 40x130 ft. gangsaw mill. Owner builds. **$200,000.** Awarded 8/2. Pearson & Phillips, 1701 W. Broadway, Vancouver, engrs. CD 10/4/45.

Man., Winnipeg—GARAGE—Dickson Motors Ltd., 676 Portage Ave., garage, to G. A. Baert, 314 Dawson Rd., St. Boniface. Approx. **$200,000.** CD 7/28.

Man., Winnipeg—BOILER HOUSE, etc.—Gypsum Lime & Alabastine Co., St. James St., boiler house and dryer, to Commonwealth Constr. Co., Royal Bank Bldg. Approx. **$130,000.** CD 6/16.

Man., Winnipeg—PLANT—Luzerne Milk Co. Ltd., 1515 Erin St., Winnipeg, milk products plant, to Malcolm Constr. Co., 554 Pembina Hy. **$70,000.**

Ont., Hamilton—PLANT—J. Deere Plow Co. Ltd., 7 Main St., rein.-con., steel, brick plant, to W. H. Cooper Constr. Co. Ltd., 44 Hunter St., Hamilton. Approx. **$70,000.** CD 3/2/48.

Ont., Leaside—FACTORY—Irvine Robinson Co. Ltd., 14 Millwood Rd., concrete, steel, brick factory, to W. Davidson Co. Ltd., 188 Duke St., Toronto. Approx. **$68,000.**

Ont., London—PLANT—John Labatt Ltd., Simcoe St., 1 story, 150 x 400 ft., brick, steel, concrete plant, and garage alterations, bottling plant equip., to John Hayman & Sons, 432 Wellington St. **$300,000** and **$150,000** respectively. J. M. Watt, 349 Richmond St., archt. CD 5/17/48.

Que., Montreal—GARAGE, etc.—Bell Telephone Co., 1050 Beaver Hall Hill, 2 story, bsmnt., 207 x 245 ft., concrete, steel, brick, garage and office, to Foundation Co. of Canada Ltd., 1900 W. Sherbrooke St. **$400,000.** Bids 7/18. Ross & Assoc., Dominion Sq. Bldg., archts. E. J. McNab, c/o owner, engr. CD 7/7.

UNCLASSIFIED

BIDS ASKED

August 23

N. Y., Lake George—BEACH—Dpt. Conservation, 488 Broadway, Albany, beach development, Contr. No. 132. $500,000. Plans deposit $5.

August 24

Missouri and Iowa—RURAL DISTRIBUTION LINES—Atchison-Holt Electric Co-operative, John Buck, pres., Rock Port, Mo., 40.5 mi. rural distr. lines, Atchison, Holt and Nodaway Counties, Mo., and Page Co., Ia.; Prof. Missouri 32 Patchison. Plans deposit $25. Henningson Engr. Co., 626 Standard Oil Bldg., Omaha 2, Neb., engr. CD 6/1.

August 25

Missouri and Iowa — RURAL DISTRIBUTION LINES—Atchison-Holt Electric Co-operative, Rockport, Mo., and part Iowa; 394 mi. rural lines, Atchison, Holt and Nodaway Counties, Mo., and Page and Fremont Counties, Ia. $150,000. Henningson Eng. Co., Standard Oil Bldg., Omaha, Neb., engr. CD 6/1.

August 26

†Oregon — TRANSMISSION LINE—RIGHT-OF-WAY-CLEARING — Bonneville Power Admin., 729 N.E. Oregon St., Portland, clearing right-of-way Lakeside-Coos River section of Reedsport-Coos Bay 115-kv transmission line. Plans deposit $5. L. C. Steward, engr.

August 30

†Md., Perry Point—UNDERGROUND TELEPHONE DUCTS—Veterans Admin., Munitions Bldg., Wash. 25, D. C., additl. underground telephone ducts, at Veterans Admin. Hospital, Proj. 4-4223.

August 31

†N. C., Fort Bragg—SWIMMING POOL, etc. —U. S. Eng., 30th Customhouse, Wilmington, swimming pool and field house. Serial No. Eng 31-075-50-1. Extended date. CD 7/20.

September 6

Manitoba — SLUICE GATES, etc. — Deputy Minister, Dpt. Mines and Natural Resources, Winnipeg, supply and erection complete 6 sluice gates and supply of one set emergency stop logs, supply and erection complete one electric cab type monorail hoist for use with emergency stop logs, Pine Falls Power Development, Manitoba Hydro Electric Bd., Winnipeg, engr. CD 1/17/45.

September 7

Ky., Richmond — GAS MAINS — Richmond Water & Gas Wks., Richmond, approx. 24,650 lin. ft. 2-in. & 4-in. intermediate and low pressure gas mains, appurtenances, incl. 6 regulator stations. Plans deposit $15. J. Stephen Watkins, 145 E. High St., Lexington, consult. engrs.

September 14

†Idaho — TRANSMISSION LINES — Bureau Reclamation, Dpt. Interior, Anderson Dam, Anderson Ranch Power-Minidoka Home 115 kilovolt transmission lines, Boise Proj. near Mountain Home, Spec. 2762.

About September 18

†N. M., Albuquerque — UTILITIES — U. S. Eng., P. O. Box 1538, Albuquerque utilities and roads for residences EOF-941 Serial No. Eng 29-095-50-13.

September 20

†Ala., Tuskegee — STEAM DISTRIBUTING SYSTEM—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D.C., outside steam distr. sys. for Veterans Administration Hospital. Spec. 4928.

LOW BIDDERS

Kansas—RURAL DISTRIBUTION LINES—Coffey County Rural Co-operative Assn., J. N. Myers, mgr., Burlington, rejected bids July 19, 1,067.51 mi. rural distr. lines, incl. conversions, secondary lines, service drops, Coffey Co., Ia. Proj. Kan., 26 Coffey Sects. H. K. and L. L. B. **$638,873.** CD 8/2, **under LB.**

Nebraska—RURAL DISTRIBUTION LINES —Custer Public Power District, Broken Bow, July 27, 334.7 mi. rural distr. lines, Lincoln, Logan and Custer Counties, from Jacobs & Doyle Constr. Co., Edgewood, Ia., **$101,784.** CD 7/14.

Neb., North Platte—SWIMMING POOL, etc. —City, July 19, swimming pool and bath house, from McMichael Contractors, North Platte. **$123,000.** Alt. $73,000. CD 5/27/47.

North Dakota—RURAL DISTRIBUTION LINES—McLean Electric Cooperative, Garrison, July 28, 398 mi. rural distr. lines, McLean Co., from Martin Eng. Co., Pelican Rapids, Minn. **$467,818.** CD 7/25.

North Dakota — RURAL DISTRIBUTION LINES—Oliver-Mercer Electric Co-operative, Hazen, 313.2 mi. rural distr. lines, Sect. 1, from E. A. Renther, 1508 E. 26 St., Minneapolis, Minn., **$218,** Alt. 2 Minn. Power & Stotko, Hancock, Minn., **$326,728.** CD 7/27.

Okla., Stillwater — ELECTRIC SYSTEM — City, Lee Hall, comr. Revenue accounting, electric ass. and converting to higher volt distr. sys., from Coates & Sain, Shreveport, Tex. **$81,693.** C. H. Guernsey & Co., 1414 N. Robinson St., Oklahoma City, **engrs.**

†Oregon—TRANSMISSION LINES CLEARING RIGHT-OF-WAY—Bonneville Power Admin., 729 N.E. Oregon St., Portland, Zone 3, Aug. 5, clearing right-of way 13.3 mi. for Willamette Forest Sect. of Maupin-Detroit 230kv transmission line. Inv. 4749. from Glen H. Eslinger, Hubbard. **$52,760.** CD 7/22.

Tenn., Memphis—TESTING STATION—City, City Hall, auto testing station, from L. & M. Constr. Co., 843 Vance Ave., **$189,852.**

CONTRACTS AWARDED

Ala., Birmingham — MOTOR COURTS — Owner and contractor, 52 unit motor court, to J. H. West, 4210 First Ave. N., Approx. **$100,000.**

Conn., New Haven—STORAGE FACILITIES —Conn Coke Co., Stiles St., 30 metal tanks storage facilities Stiles St. Owner builds, **$150,000.**

Kentucky—RURAL DISTRIBUTION LINES —Inter-County Electric Co-operative, Danville, 75 mi. rural distr. lines, 2 substations, Boyle, Lincoln, Garrard, Casey, Marion, Madison and Washington Counties, to Real Electric Co., Owensboro, **$92,** 83. CD 6/27.

South Dakota — RURAL DISTRIBUTION LINES—La Creek Electric Assn., Martin, 260 mi. rural distr. lines, Bennett Co., to Philard, Inc., Sioux Falls, **$308,000.** Bids 7/27. CD 3/30.

Tex., Dallas — RADIO STATION — Baptist Foundation of Texas, c/o Radio Dpt., Baptist Bldg., 86,000 watt fm radio stations, incl. 600 ft. steel tower, (Letters KVBS), to Andrews Tower Co., Throckmorton Co., and Collins Radio Equip. Co., 855 35 St., N. E., Cedar Rapids, Ia., Approx. **$75,000.**

Alberta—GAS WELL DRILLING—Stanolind Oil & Gas Co., Stanolind Bldg., Tulsa, Okla., U. S. A., gas well drilling, own forces. Approx. **$50,000.**

Newfoundland, St. John's—TRAM RAIL REMOVAL—Municipality, c/o J. J. Mahoney, city clk., St. Johns, tram rails removal, to Concrete Products Ltd., Water St. **$50,000.**

N. S., Halifax—PARK IMPRVS.—Municipality, impry. western slope Fort Needham Park, day labor, **$100,000.** Relief Comm., Halifax, engr.

Ont., Maidstone — RADIO STATION—Canadian Broadcasting Co., 1231 W. Ste. Catherine St., Montreal, Que., radio station, to Woodall Bros., 171 Walker Rd., Windsor. **$100,000.**

Sask., Yorkton—SKATING RINK—Municipality, skating rink, to H. M. Selhauer, Yorkton. **$51,850.** Bids 5/30. CD 5/25.

PROPOSED PROJECTS

WATER SUPPLY

N. J., Roebling—Florence Twp., Roebling, municipal water expansion proj., incl. (1) install control valve, with interconnection of 6 in. fill and draw line from the standpipe at Second and Riverside Aves.; (2) connecting the 8 in. main in school, Knickerbocker Ave. to line at 7 Ave. and Main St.; (3) joining the old village sys. to twps. distr. at Norman and Knickerbocker Aves.; (4) install pressure valves at Eighth & Main Sts., Norman and Knickerbocker Ave.; (5) laying watermain along Norman Ave. from Fifth St. to James St. 1, (6), consult. in main from Third and Olive Sts., to Delaware Ave. and Insertion of shut-off valves in Knickerbocker Rd.; (7) insertion of shut-off valves in all streets in village; (8) install new modern fire hydrants; (9) cleaning of existing mains. $75,000.

N. C., Southern Pines — Town, Southern Pines, bond election September 3, WW, double capacity of water plant, extend facilities. **$275,000.** Pierson & Whitman, Security Bank Bldg., Raleigh, consult. engrs. CD 7/19/49.

●Saskatchewan — Province of Saskatchewan, Regina, pumping water from South Saskatchewan River at Elbow, transporting approx. 45 mi. east to Buffalo Pound Lake, Regina, and treatment plant. **$5,690,000.** Dpt. Agriculture, Regina, engr.

SEWERS, WASTE DISPOSAL

●†R. I., New Port—U. S. Navy, Construction Officer, Naval Training Base, Newport, sewage disposal plant, incl. sewage plant, treatment facilities, interceptor sewers, prevention water pollution Washington Co. **$1,250,000.** Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., consult. engrs.

STREETS AND ROADS

●Massachusetts — Commonwealth of Massachusetts, Dpt. P. Wks., 100 Nashua St., Boston.

Boston — central traffic artery, **$25,000,000.** Fay, Spofford & Thorndike, 11 Beacon St., and Charles A. Maguire & Assoc., 46 Cornhill St., Boston, assoc. engrs.

Ont., Toronto—City, Dpt. Parks & Recreation, Toronto, c/ conc. roadway, from Toronto Island Airport to Ferry Docks, Wards Island; bridge Cibola Ave. and bridge over lagoon, adjacent to former Lakeside Home property. Approx. **$593,683.**

EARTHWORK, WATERWAYS

N. J., Ocean City—State Dpt. Conservations & Economic Development, 520 E. State St., Trenton, jetty and sea wall, approx **$275,000.**

Tex., Winnie — Jefferson-Chambers Water Control & Impry. Dist., Anahuac, primary and secondary drainage ditches. Approx. **$100,000.**

AIRPORTS AND AIRBASES

R. I., Cranston—RADAR STATION—Rhode Island Air National Guard, Commanding Officer, 51 Stanton St., Providence, 1 story, 110x165 ft. radar station. **$110,000.**

LATIN AMERICA

Bolivia, Tupiza—Lloyd Aero Boliviano, La Paz, plans airport. **$250,000.**

●B. W. I., Carenage—The American Alcoa Steamship Co., Port of Spain, plans bauxite transfer station, **$6,000,000.**

●Cuba, Regla—Iturrus Mill & Elevator Co., Mercantile Bank Bldg., Dallas, Tex., plans flour mill. **$4,000,000.**

Mexico, Guadalajara — Fibro-Mex. General Salazar, 226, Guadalajara, Jal. plans paper factory. **$250,000.**

Mexico, Naucalpan—Radio Impulsora Mexicana, S. A., Calzada de Ingenieros Zapadores, S/N., Naucalpan, Mexico, Mex., plans radio apparatus parts factory. **$300,000.**

Mexico, Nuevo Laredo — Empacadora de Nuevo Laredo, S. A., Gante, 15-115, Mexico, D. F., plans meat packing house, refrigeration plant and by products factory. **$100,000.**

PUBLIC BUILDINGS

Ark., Little Rock — MARKET — Chamber of Commerce, 231 Louisiana St., curb market. **$600,000.**

Calif., Los Angeles — SCHOOL — City Bd. Edc., 1425 S. San Pedro St., plans by Austin, Field & Fry, 2311 W. 3 St., boys physical education bldg. at Venice High School. **$425,000.** CD 1/19.

●Conn., Hartford—HEADQUARTERS—City, Municipal Bldg., Mr. Sharpe, mgr., 550 Main St., plans by Willard H. Wilkins, 957 Asylum Ave. and Maurice H. Golden, 343 Fairfield Ave., brick, steel, stone police headquarters, **$1,300,000.** CD 11/18/48.

Conn., Thompsonville — SCHOOL — Town of Enfield, Bd. Selectmen, Town Hall, brick, steel school, Hazardville Sect **$250,000.**

†D. C., Wash. — WHITE HOUSE — Commission Reincarnation of Executive Mansion c/o Senator Kenneth McKellar, chm., Senate Office Bldg. Wash., 25, D. C., plans repairing, remodeling White House, **$5,400,000** ($2,000,000 appropriated). William D. Delano, 126 E. 38 St., New York, N. Y., consult. archt. E. H. Praeger, c/o Madigan-Hyland, 28-04 41 Ave., Long Island City, N. Y., and E. E. Howard, c/o Howard, Needles, Tammen & Bergendorff, 291 Walnut St., Kansas City, Mo., consult. engrs. CD 1/21/46.

Ill., Lagrange Park—SCHOOL—Bd. Educ., Dist. 102, LaGrange, plans by Joseph C. Llewellyn Co., 38 S. Dearborn St., Chicago, 2 story, Nominal 100x150 ft. steel, brick, stone school, **$300,000.**

Ind., New Albany—GRADE SCHOOL—Bd. School Trustees, High School Bldg., plans by Hawkins & Walker, 218 Elsby Bldg., 1 story, 78x241 ft. brick, reinforced steel Ellen Jones School, 11 and Oak Sts., **$300,000.**

Kan., Beloit — DORMITORY and ADMINISTRATION — State of Kansas, Topeka, plans by C. L. Marshall, state archt., Topeka, and Floyd Wolfenbarger, Manhattan, dormitory and administration bldg. at Girls Industrial School. **$400,000.**

Kan., Hays — COLLEGE BLDGS. — State of Kansas, Topeka, plans by C. L. Marshall, Topeka, state archt. and Forshlom & Parks, Beacon Bldg., Wichita, dormitory **$350,000;** plans by C. L. Marshall, Topeka, state archt. and Lescher & Mahoney, 515 N. Hillside St., Wichita, mens resident hall, Kansas State College. **$400,000.**

Kan., Parsons — WOMENS — State of Kansas, Topeka, plans by C. L. Marshall, state archt., Topeka, womens bldg., State Hospital. **$385,000.**

Kan., Pittsburg — COLLEGE BLDGS — State of Kansas, Topeka, plans by C. L. Marshall, Topeka, state archt. and T. W. Williamson & Co., National Bank of Topeka Bldg., Topeka, secondary school. **$550,000;** plans by C. L. Marshall, Topeka, state archt. and Coen Benedick, Wichita, dormitory, Kansas State Teachers College, **$250,000.**

Kan., Topeka — ADMINISTRATION — State of Kansas, Topeka, plans by C. L. Marshall, Topeka, state archt. and Raymond Coolidge, New England Bldg., Topeka, administration bldg. at Boys Industrial Home. **$125,-000.**

Md., Rising Sun—SCHOOL—School Comrs., Cecil Co., Elkton, plans by Buckler, Fenhagen, Meyer & Ayres, 24 and St. Paul Sts., Baltimore, 1 and 2 story, brick, stone, steel, concrete school addn. **$800,000.**

Md., Rockville — HIGH SCHOOL — Montgomery Co. Bd. Educ., Rockville, plans by Leed & Ferrara, 1830 Jefferson Pl. N. W., Wash. D. C., 2-story high school. **$350,000.**

Mass., Belmont — HOSPITAL — Commonwealth of Massachusetts, Dpt. Mental Health, 100 Nashua St., Boston, plans by T. J. McDonough, 25 Huntington Ave., Boston, hospital bldg., W. E. Fernald, State School. Approx. **$250,000.**

Mass., Cambridge — HOUSING — City of Cambridge Housing Auth., 1416 Massachusetts Ave., plans by W. J. Edwards, 126 State St., Boston, 40 or 45 units veterans housing, Harvard and Prospects Sts. Approx. **$425,000.** CD 1/6.

●Mass., Chicopee — HOUSING — Chicopee Housing Auth., Chicopee, plans by Henry J. Tessier & Morris W. Maloney, 220 Dwight St., Springfield, 2 to 2½ story houses, 150 units, Curtis Terrace Sect., Montgomery St., **$1,500,000.** CD 6/21/45.

Mass., Dartmouth—SCHOOL—Com. Richard Tucker, supt., Schools, Dartmouth, brick, steel school. **$250,000.**

†Mass., Waltham — QUARTERS — U. S. of America, Dpt. of the Army, Office of Post Engr., Murphy General Hospital, living quarters, Murphy General Hospital. **$750,600.**

Mass., Wrentham—INFIRMARY—Commonwealth of Massachusetts, Dpt. Mental Health, 100 Nashua St., Boston, plans by M. A. Dwyer Co., 8 Beacon St., Boston, infirmary bldg., State Hospital. Approx. **$250,000.**

Minn., Minneapolis — ATOM SMASHER — University of Minnesota, R. S. Callaway, purch. agt., 323 Admin. Bldg., Main Campus, atom smasher, **$728,000.**

Mo., Braymer — SCHOOL — Consolidated School Dist., Braymer, voted **$300,000** bonds school.

●**N. J., Atlantic City** — ARMORY — P. Wks. Office, Phila. Naval Base, Phila., Pa., project withdrawn, armory addn., NOV 18?24. **$200,-000.** CD 6/30.

R. I., Pawtucket—FIRE STATION—City, Pub. Wks. Dpt., Wm. Fortin, Pawtucket, brick, steel, concrete fire station, Prospect and Division Sts. **$250,000.**

●**Tenn., Nashville** — INDUSTRIAL SCHOOL — State Bd. Educ., State Office Bldg., plans by John E. Harwood, American Trust Bldg., Industrial School for Negroes, **$1,000,000.** CD 9/18/47.

Tex., Austin—POWER SUBSTATION—City, Guiton Morgan, mgr., City Hall, electric power sub-station, **$300,000;** electric power distr. lines, **$300,000.** Burns & McDonnell, Engr. Co., 95 and Troost Sts., Kansas City, Mo., consult. engrs. CD 5/28.

Tex., Banquette—GYMNASIUM—Banquette Independent School Dist., Banquette, voted bonds, gymnasium and cafeteria remodeling existing cafeteria into shop, **$250,000.** Joe G. Smith, Jr., 1806 S. Alameda Rd., Corpus Christi, archt.

Tex., Corpus Christi — AUDITORIUM, CLASSROOM — Corpus Christi Independent School Dist., Del Mar College, Corpus Christi, plans by Brook & Aycock, Jones Bldg., auditorium and classrooms, **$500,000.** Matthews & Kenan, 1908 Transit Tower, San Antonio, engrs. CD 5/13.

Tex., Mason—SCHOOL—Mason Independent School Dist., c/o H. N. Carnes, supt., Mason, school, **$250,000.**

●**W. Va., Glenville** — SCHOOL — Bd. Educ., Gilmer Co., Box 92, plans by Wm. J. Lance, Capitol Bldg., Quarrier St., Charleston, 4 story, basmt., stone or brick consolidated grade school and high school, **$1,000,000.** CD 3/18/48.

●**Alta., Edmonton**—FEDERAL—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., plans by G. Brault, c/o owner, and G. H. MacDonald, 824 Tegler Bldg., 10 story public federal bldg., Market Sq. Approx. **$1,500,000.**

B. C., Burnaby—HOSPITAL, etc.—Burnaby Hospital Society, 3327 Cedar Ave., plans by Gardiner & Thornton, 1664 W. Broadway, Vancouver, rein.-con. hospital and nurses home. Approx. **$700,000.**

Ont., Fort Frances — ARMORY — Dominion Govt., Hunter Bldg., Ottawa, plans by Dpt. National Defense, Cartier Sq., Ottawa, 267x297 ft. armory. **$300,000.**

Ont., Milton—OLD FOLKS HOME—Holton Co. W. Deans, clk., old folks home. Approx. **$500,000.**

Ont., Pickering — HIGH SCHOOL — High School Bd., Pickering, high school. **$250,000.**

Ont., Smiths Falls — HOUSING — Central Mortgage & Housing Corp., 395 Fleet St. W., Toronto, 50 houses. Approx. **$350,000.** A. J. E. Smith, c/o owner, engr.

Que., McMasterville—SCHOOL AND COMMUNITY CENTRE—Protestant School Bd., McMasterville, plans by A. L. Perry, 1434 Ste. Catherine St. W., Montreal, school and community center. **$250,000.**

Que., St. Joseph — SCHOOL — Province of Quebec, Quebec City, plans by Ministry of Youth & Welfare, Post Office Bldg., Quebec City, school of household sciences. **$250,000.**

COMMERCIAL BUILDINGS

Idaho, Lewiston — CLUB — Lewiston Eagles Lodge, Lewiston, 1 story, club. **$250,000.**

Ill., Chicago—BUSINESS BLOCK—Cain & Cyphanc, 4345 N. Broadway, plans by Clarence L. Dahlquist & Assoc., 430 N. Michigan St., 1 story, business block, Glenview and Waukegan Rds. **$300,000.**

●**Ill., Chicago**—APARTMENT—1350 Corp., c/o Draper & Kramer, Inc., archs., 18 W. Washington St., Zone 2, plans by Loehl Schlossman & Bennett, 333 N. Michigan St., Zone 11, 21 story, steel brick, concrete apartment, incl. 740 units, 1352-56 N. Lake Shore Dr. **$1,000,000.**

Ill., Chicago—COMMUNITY HOUSE—Kehilath Anshe Mayriv, Temple, 920 E. 50 St., Zone 15, plans by Friedman, Alschuler & Sincere, 222 W. Jackson St., Zone 6, 2 story, basmt., 90x100 ft., steel, brick, concrete, stone community house addn. **$300,000.**

La., Monroe — APARTMENT — Park Ave. Development, Bastrop, plans by H. H. Land, Ouachita Bank Bldg., apartment house development, on 4 acre tract between Willow and North Twelfth Sts. **$600,000.**

La., New Orleans—APARTMENT—Gus Levy, 33 Audubon St., plans by Curtis & Davis, 822 Perdido St., 7 story apartment, 2827 St. Charles Ave.

●**Mo., Kansas City** — APARTMENTS — Twin Oaks Inc., c/o Raymond L. Voskamp & Frank R. Slezak, archts., 112 E. 10 St., two 11 story, rein.-con. apartments, incl. 620 units, **$7,000,000.**

N. H., Newport — HOSPITAL — Carrie F. Wright Hospital, W. F. Sullivan, chn. Bd. Trustees, Newport, plans by Orcutt & Marston, 37 S. Main St., Hanover, 28 bed hospital. **$350,000.**

●**N. Y., New York** — OFFICE — Madison 60th Street Corp., 787 Eleventh Ave., plans by Sylvan Bien, 565 Fifth Ave., Zone 7, office and store at 657 Madison Ave. **$2,000,000.**

N. Y., New York—CHURCH—Roman Catholic Church of St. Emeric, 271 Avenue C, Zone 9, plans by Voorhees, Walker, Foley & Smith, 101 Park Ave., Zone 17, church, 740 E. 13 St. **$300,000.**

O., Akron — SANCTUARY — Firestone Park Methodist Church, 250 N. Firestone Blvd., sanctuary on present church grounds. **$250,000.**

O., Akron — CHURCH SANCTUARY, etc. — First Evangelical and Reformed Church, 222 S. Broadway, church sanctuary and educational bldg., colonial style, W. Exchange St. and Work Dr. **$500,000.**

O., Cuyahoga Falls—EDUCATIONAL, etc.—Cuyahoga Falls Methodist Church, Portage Trail and 3 St., educational bldg., and church facilities. Approx. **$400,000.**

Pa., Gladwyne—CHURCH—Episcopal Church Diocese of Penna, 202 S. 19 St., Phila., sketches St. Christopher's Church. **$250,000.**

Pa., Norristown—HOSPITAL—Fairview Village, 1829 Pine St., Phila., plans by Sydney Jellinck, 926 Walnut St., Phila., hospital addn. **$250,000.** CD 7-21.

●**Pa., Phila.**—HOSPITAL—Lankenau Hospital, Corinthian and Girard Aves., plans by Vincent G. Kling, 917 Corinthian Ave., hospital at Overbrook. **$6,000,000.** Ewing, Wegers Saving Fund Bldg., Broad and Chestnut Sts., assoc. archt. CD 4/7/47.

●**Pa., Wynnewood** — APARTMENT — John W. Merriam, 123 S. Broad St., Phila., plans by George B. Ehret, 123 S. 17 St., Phila., apartment development, Penn Rd. **$3,000,000.** CD 9/10/48.

●**Tex., Corpus Christie** — DUPLEXES and APARTMENTS—Buccaneer Apartments, Tuscaloosa, Ala., and Fisher & Joe J. Alsup, Wilson Bldg., plans by Lee H. Schaefer, 1st Nat'l Bank Bldg., Tuscaloosa, Ala., 43 one story, brick accessory duplexes, concrete pier and beam fdns. **$665,210;** 32 two story, brick veneer apartments, concrete pier and beam fdns. incl. playgrounds, garages, laundry units, **$1,980,160** in Buccaneer Gardens. H. & M. (McClendon & Assoc.) Eng. Co., 127 N. Staples St., Consult. engrs.

Tex., Dallas — HOUSING — Hillside Manor, Inc., 2602-A Cedar Hill St., plans by George W. Edwards, 1509-A Cochran St., nineteen 26x96 ft. frame buildings, concrete slab floors, off Hines Blvd. **$800,000.**

Tex., El Paso—RESIDENCES—West Texas Builders, Inc., one story masonry, 150 cinder block residences, concrete slab fdn. and floors. **$550,000.** Morgan & Kerley, El Paso, consult. engrs.

●**Tex., Houston**—COMMERCIAL—H. K. Ferguson Co., M. & M. Bldg., 1 story masonry, steel, commercial bldg., San Jacinto and McGowen Sts. **$2,000,000.** CD 3/4.

Tex., Houston—APARTMENT—K. & S. Corp., City Natl. Bank Bldg., 100 unit masonry apartment, rein.-con. slab on fitting fdn., 5100 block Mercer St. **$100,000.**

Tex., San Antonio — GYMNASIUM — San Fernando Parish School, Laredo and Travis Sts., plans by Leo M. J. Deelmann, 145 North St., masonry gymnasium. **$250,000.**

Tex., Waco—EDUCATIONAL BLDG. — Columbus Ave. Baptist Church Congregation, 1300 Columbus Ave., plans by W. Cocke, Jr. & Co., 1507 Franklin St., 3 story basmt., 63x121 ft. brick, hollow tile, gymnasium block educational bldg., incl. 1 story 33x57 ft. chapel. **$350,000.** Frank T. Drought, 117 W. Pecan St., San Antonio, structural engr. H. B. Wells, Dallas, mechanical engr.

Tex., Waco — DORMITORY — Methodist Orphans Home, c/o Hubert Johnson, supt., Waco, plans by Ray C. Arnhold, Nacol Bldg., Wichita Falls, 3 unit 2 story masonry dormitory, concrete slab fdn. **$350,000.**

●**Tex., Wichita Falls** — DWELLINGS — R. G. Hughes, Pampa, 600 dwellings, **$3,000,000;** 250 apartment units, **$1,250,000,** first for immediate construction in 264 acre tract southwest of city limits.

Ont., Ottawa—BUILDING—Peoples Credit Jewellers, Ltd., 190 Sparks St., 3 story bldg. Approx. **$250,000.**

Ont., Ottawa — HOUSING — Rhodes & Radcliffe, 56 Spark St., plans by Peerless Ltd., 322 Wellington St., 6 houses. **$300,000.**

Que., La Malbaie—CHURCH—Roman Catholic Parish, La Malbaie, church. **$275,000.**

Que., St. Bernard (Postal Dist., Lacelle)—MONASTERY—Order of Trappists of Tongerloo, Antwerp, Belgium, monastery. **$250,000.**

INDUSTRIAL BUILDINGS

La., New Orleans — WAREHOUSE — M. G. Loubat, c/o Riecuitt, Stoffle & Assoc., archts., Queen and Crescent Bldg., warehouse. Approx. **$100,000.**

●**Neb., Scottsbluff** — POWER PLANT—Consumers Public Power Dist., Columbus, power plant expans., building addn. and power generating equip., etc. Approx. **$1,000,000.** Ray Schacht, c/o owner, engr.

N. Y., New York — SUBSTATION — Consolidated Edison Co., 4 Irving Pl., Zone 3, electrical distr. substation and pump house at 236-38 Cherry St. **$130,000.** Theron R. Galloway, c/o owner, engr.

Wash., Seattle — FACTORY — Pacific Stove & Foundry Co., 112 W. Idaho St., rebuilding factory. **$100,000.**

Ont., Nobel — PLANT — A. V. Roe Canada, Malton, plant addns. **$100,000.**

Ont., Prescott—FACTORY—Owner, c/o C. Burgess, archt., 53 Queen St., Ottawa, 90x270 ft., brick, steel factory. Approx. **$150,000.**

Que., Montreal — PLANT — Canada & Dominion Sugar Co. Ltd., 1410 Montmorency St., plant exten. **$100,000.** McGraw Co., of Canada, 276 St. James St., engrs.

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Mississippi—RURAL DISTRIBUTION LINES—Coast Electric Power Assn., Bay St. Louis, 85 mi. rural distr. lines, sys. imprvs., Proj. Mississippi 28, Hancock Co. **$350,000.** Pepper & Mallory, Yazoo City, consult. engrs. CD 7/28.

Missouri — RURAL DISTRIBUTION LINES—North Central Missouri Electric Co-operative, Inc., Milan, addnl. rural distr. lines, conversion lines, sys. imprvs., Sullivan Co. **$810,000.**

●**Mo., St. Louis** — DOCK — City of St. Louis, c/o Frank J. McDevitt, pres., Bd. P. Service, 304 City Hall, 12 and Market Sts., Zone 3, 2,000 ft. rein.-con. steel city dock, warehouses, Mississippi River, south of Present Municipal Dock at foot N. Market St., **$3,000,000-$4,000,000.**

Montana—RURAL DISTRIBUTION LINES—Tongue River Electric Co-operative, Inc., Terry, 85 mi. rural distr. lines, sys. imprvs., Custer Co. **$126,000.**

Nebraska—RURAL DISTRIBUTION LINES—Cuming County Rural Public Power Dist., West Point, rural distr. lines, Cuming Co. **$600,000.** Henningson Eng. Co., Standard Oil Bldg., Omaha, consult. engrs. CD 2/24/48.

Nebraska — OIL PIPELINE — Ohio Oil Co., Findlay, crude oil pipelines from Sidney to points in Garden, Cheyenne, Deuel and Morrill Counties. **$500,000.**

O., Bellefontaine—COLISEUM—Comrs. Logan Co., Courthouse, Bellefontaine, 4,000 seat capacity community coliseum at Fairgrounds. **$279,600.**

O., Cleveland—TANKS—Standard Oil Co. of Ohio, 2735 Broadway Ave., small naphtha tanks. **$100,000.** M. C. Fuller, c/o owner, engr.

O., Lakewood — SWIMMING POOL — City, A. Kaufmann, Dir. Pub. Wks., 14532 Lake Ave., bond election November 8, swimming pool and brick, steel frame locker bldg. **$250,000.**

●**Pa., Pleasant Hills**—DRIVE-IN THEATER—Norbert Stern, 436 4 Ave., Pittsburgh, plans by Vogel Bldg. Co., Liberty Theater Bldg., Wellsville, O., drive-in theater, indoor theater, shopping center, paving and sewering, etc., Route 51. **$1,000,000.**

●**R. I., Providence** — TRANSIT SHED — City, Dennis J. Roberts, mayor, City Hall, plans by Qesto Di Saia, 703 Gardner Bldg., 1 story, concrete, brick transit shed, loading facilities. Municipal Wharf. **$1,250,000.** CD 3/2/48.

South Carolina — RURAL DISTRIBUTION LINES—Blue Ridge Electric Co-operative, Inc., Pickens, sys. imprvs. and 7.3 mi. rural distr. lines, Oconee Co. **$170,000.**

South Carolina — RURAL DISTRIBUTION LINES — Fairfield Electric Co-operative, Inc., Winnsboro, 91 mi. rural distr. line and sys. imprvs., Fairfield Co. **$275,000.**

S. C., Columbia — SWIMMING POOL — City, c/o City Engr., City Hall, 1307 Main St., swimming pool for Negroes. **$200,000.**

Tenn., Johnson City—ELECTRIC SYSTEM—City, c/o mayor, Johnson City, electric sys. imprvs. **$115,000.**

Texas — RURAL DISTRIBUTION LINES — Concho Valley Electric Co-operative, Inc., San Angelo, 164 mi. rural distr. lines and sys. imprvs., Tom Green Co. **$285,000.**

Tex., San Antonio—SWIMMING POOL—City, City Hall, 2 rein.-con. municipal swimming pools, one at Nelson Pace Junior High School, other off Broadway near Sunken Garden, **$100,-000** each. Henry Hein, city engr.

Tex., Texas City—TRAFFIC CONTROL SYSTEM—City, City Hall, electric traffic control sys. **$105,000.** Robert Osburn, city engr.

Utah, Salt Lake City—SWIMMING POOLS—City, Irma Bitner, recdr., City and County Bldg., 3 swimming pools and renovate 2 pools. **$230,000.** W. D. Beers, city engr. CD 5/24/44.

●**Va., Charlottesville** — OBSERVATORY — Bureau Yards and Docks, Annex, Navy Dpt., Arlington, Va., Naval Observatory in Pine Mountain area, Albemarle Co. **$8,000,000.**

Washington — RURAL DISTRIBUTION LINES — Benton Rural Electric Assoc., Inc., Prosser, 80 mi. rural distr. line and sys. imprvs., Benton Co. **$375,000.**

Ont., Hamilton — WHARF — Dominion Government, Hunter Bldg., Ottawa, wharf addns., **$700,000.**

Que., St. Johns—TOWERS—Singer Mfg. Co. Ltd., 2 St. Paul St., plans by E. C. Miller, 485 McGill St., Montreal, two 5 story, 18x22 ft. concrete, steel towers.

Que., Werdon—POWER DEVELOPMENT—Municipality of Sherbrooke, Sherbrooke, power development addns. **$100,000.** J. C. Cote, Sherbrooke, engr.

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U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Sealed bids (Specifications No. 2756) will be received by Bureau of Reclamation, Phoenix, Arizona, September 5, 1949, and then publicly opened for furnishing labor and materials and performing all work for the installation of conductors and overhead ground wires on the Davis-Hoover and Davis-Parker transmission lines, Davis Dam Project, Arizona-Nevada. Principal items are approximately: 134 miles of 230-kilovolt steel-tower transmission lines and other work. Time allowed for completion will be 300 days. For particulars, address Bureau of Reclamation, Aviola Building, Phoenix, Arizona; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner. (310)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Sealed bids (Specifications No. 2758) will be received by Bureau of Reclamation, Denver, Colorado, September 1, 1949, and then publicly opened for furnishing labor, tools, and equipment and performing all work for the installation of two overhead ground wires on the Cheyenne-Greeley 115-kilovolt transmission line, Kendrick Project, Wyoming-Colorado. Principal items are: installing two ⅜-inch overhead ground wires for approximately 52 miles of line; repairing existing transmission-line structures; and other work. All work to be completed on or before December 15, 1949. For particulars, address Bureau of Reclamation, Casper, Wyoming; or Building 1-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner. (309)

Bureau of Public Roads, General Services Administration, Aug. 4, 1949. SEALED BIDS will be received at the office of the Bureau of Public Roads, City Hall, Iron River, Michigan, until 10:00 a.m., C.S.T., SEPTEMBER 9, 1949, for the construction of Michigan Forest Highway Project No. 16-A2, B2, C2, D2, E2, F2, G2, Part of Iron and Houghton Counties, Mich. Length —12.979 miles. The approximate quantities of the more important items are as follows: 38,750 cu. yd. Excavation; 20,600 cu. yd. Crushed Gravel or Crushed Stone Base Course; and 16,500 tons of Plant Mix Surfacing. Minimum wage rates have been fixed as required by law. For plans and specifications, a deposit of $10.00 cash or certified check made payable to the Treasurer of the United States will be required to insure their return within 15 days after the opening of bids. Plans, specifications, and proposal forms may be obtained from the offices of the Bureau of Public Roads, City Hall, Iron River, Michigan; 214 Globe Bldg., 4th and Cedar Sts., St. Paul, Minnesota, and 1440 Columbia Pike, Arlington, Virginia. H. J. Spelman, Division Engineer. (311)

OFFICIAL PROPOSALS

Bids: August 30, 1949 (315)

Grade Separation Project

SECTION A
CONSTRUCTION OF THE ALLEN-DALZELL-LINWOOD GRADE SEPARATION PROJECT
SHREVEPORT, LOUISIANA

NOTICE TO PROSPECTIVE BIDDERS:
Sealed proposals, addressed to the Secretary-Treasurer of the City of Shreveport, Louisiana, subject to the conditions contained herein, for the construction of a viaduct with approaches, for a street or highway connection at separated grades above the tracks of the Illinois Central Railroad Company, the Texas and Pacific Railway Company, The Kansas City Southern Railway Company, and Texas and New Orleans Railroad Company, from Allen Avenue at its intersection of Texas Avenue to Dalzell Street and Linwood Avenue, all within the corporate limits of the City of Shreveport, Louisiana, and in conformance with the plans, specifications and related data prepared by E. M. Freeman and Associates, Consulting Engineers, Texas Eastern Building, Shreveport, Louisiana, will be received until 10:00 A. M. o'clock, Central Standard Time, Tuesday, August 30, 1949, at the Council Chamber, City Hall, Shreveport, Louisiana, and then publicly opened and read aloud.

Envelopes containing bids shall be plainly marked "Bids for the Construction of the Allen-Dalzell-Linwood Grade Separation Project" and delivered or mailed to the Secretary-Treasurer, City Hall, Shreveport, Louisiana. Bids arriving after the time mentioned above will not be considered.

The approximate quantities of items of work are, principally, but not limited to: Excavation for foundations; 425 cubic yards of cast-in place concrete foundations; 21000 cubic yards of compacted earth fill for approaches; 625 tons of structural steel; 30 tons of steel blast plates; 2300 cubic yards of reinforced concrete deck slabs and miscellaneous structural concrete items; 3450 square yards of pavement; drainage structures; 6077 square feet of concrete sidewalks on grade; 1376 lineal feet of approach guard rail; painting, grass erosion control; and lighting.

Each bid must be accompanied by a certified check, drawn on and certified by a bank satisfactory to the Owner, or a bidder's bond executed by a Surety Company suitable to the Owner and authorized to do business in the State of Louisiana, in the amount of 5% of the largest possible aggregate total of the prospective bidder's proposal, payable, without recourse, to the City of Shreveport, Louisiana, must accompany each bidder's proposal as a guaranty that the bidder will enter into a contract with the Owner and with each individual Railroad, and will execute the required Performance Bond, all in the forms provided, within ten days after notice of award of contract. Bids or proposals without the required bid guaranty, will not be considered.

The successful bidder must furnish and execute a Performance Bond in the principal amount of one hundred percent of the aggregate total contract price from a Surety Company authorized to operate in the State of Louisiana as Surety, and suitable to the Owner.

The contract documents including plans, specifications, proposal forms, and other pertinent data may be examined, without charge, in the office of the project engineers, E. M. Freeman and Associates, Texas Eastern Building, Shreveport, Louisiana, or, at the office of the Department of Public Works, City Hall, Shreveport, Louisiana.

If the bidder desires a set of plans, specifications, proposal forms, and related data, he may obtain such from E. M. Freeman and Associates, Consulting Engineers, Texas Eastern Building, Shreveport, Louisiana, upon the deposit of Twenty Dollars ($20.00) for each set obtained. This Twenty Dollar ($20.00) deposit will be returned to the depositor, provided all documents furnished him are returned in complete and unmutilated condition to the office of the engineers. Bidders shall examine the plans, specifications, and all related documents, and will be held to have examined the site of the work, and to have familiarized themselves with all of the circumstances and conditions effecting the costs and nature of the work. The successful bidding contractor shall pay not less than the general prevailing wage rates for the Shreveport area to all employees working on this project. A schedule of prevailing wage scales for this area may be viewed at the office of the engineers, Shreveport, Louisiana.

It shall be the contractor's responsibility to inform himself, thoroughly, of all applicable City, Parish, State and Federal laws and statutes. The Owner shall be held free from responsibility for infringement upon any applicable City, Parish, State and Federal laws and statutes. The contractor shall procure and pay for all required local permits, such as building permit, electrical permit and plumbing permit.

The Owner reserves the right, as the interest of the Owner may require, to accept or reject any or all proposals or bids, to waive informalities in bids received, and to accept or reject any items of any bid, unless subject bid is qualified by a specific limitation.

The City also reserves the right to make any investigations, deemed necessary, of a bidder's ability to perform the work indicated, and to accept the proposal which, in the judgment of the Owner, is the best bid.

Construction work shall not commence until issuance of a written work order from the Owner.

Time limit for construction of the proposed work shall be one calendar year from issuance of the work order.

Bids must be submitted on the standard form of bid furnished by the engineers with the plans and specifications.

The successful contractor will be required to execute a separate agreement with each Railroad involved in the project, relating to entry upon and protection of Railroad property.

s/J. T. Tanner
Secretary-Treasurer

Bids: September 14, 1949 (305)

High Service Suction, Low Service Discharge, etc.

Office of City Purchasing Agent
Nashville, Tennessee

Sealed bids will be received by the Purchasing Agent of the City of Nashville, Tennessee, at his office in the City Hall, until 10:00 A.M., Central Standard Time, on Wednesday, September 14, 1949 for a High Service Suction, Low Service Discharge, and Appurtenances, at the Water Filtration Plant and Pumping Station, according to plans and specifications which are on file in the office of Robert L. Lawrence, Jr., Director of the Nashville Waterworks Department, Room 201 City Hall, Nashville, Tennessee, and also the office of The Chester Engineers, 216 East Park Way, Pittsburgh 12, Pennsylvania. Immediately after closing time for the receipt of bids they will be publicly opened and read aloud in the office of the Purchasing Agent.

The successful bidder will be required to furnish a satisfactory performance bond.

All bids shall be made upon the blank forms of the contract documents. Copies of all contract documents, including Proposal Form, Contract, Plans and Specifications and Instructions to Bidders may be obtained at the office of The Chester Engineers by depositing Twenty-five Dollars ($25.00) for each set of documents so obtained. The entire deposit will be refunded to each actual bidder and Fifteen Dollars ($15.00) will be returned to all others who return plans and specifications in good condition within ten (10) days after opening of bids.

The right is reserved by the City of Nashville, through its Mayor, to reject any and all bids, to waive any informalities in the bids received, and to accept any bid which, in its opinion, may be for the best interest of the City.

A Certified check or bank draft, payable to the City of Nashville, or a satisfactory bid bond executed by the bidder and a surety company authorized to transact business in the State of Tennessee, in an amount equal to Five Percent (5%) of the bid, shall be submitted with each bid.

No bid may be withdrawn after the scheduled time for the receipt of bids.

CITY OF NASHVILLE, TENNESSEE
by E. B. Smith,
Purchasing Agent.

(Continued on pages 112 & 123)

U. S. Government
(Continued from page 111)

Bureau of Public Roads, General Services Administration, August 9, 1949. SEALED BIDS will be received at the office of the Bureau of Public Roads, City Hall, Iron River, Michigan, until 10:00 a.m., C.S.T., SEPTEMBER 14, 1949, for the construction of Michigan Forest Highway Project No. 16-H, Iron County, Michigan. Length 5.423 miles. Approximately 88,000 cu.yd. Excavation and 13,000 cu. yd. Gravel Surface Course, and other work. Minimum wage rates have been fixed as required by law. For plans and specifications, a deposit of $10.00 cash or certified check made payable to the Treasurer of the United States will be required to insure their return within 15 days after the opening of bids. Plans, specifications, and proposal forms may be obtained from the offices of the Bureau of Public Roads, City Hall, Iron River, Michigan; 214 Globe Bldg., 4th and Cedar Sts., St. Paul, Minnesota, and 1440 Columbia Pike, Arlington, Virginia. H. J. Spelman, Division Engineer. (312)

OFFICIAL PROPOSALS

Bids: August 31, 1949 (312)

Construction of Grading, Drainage, Structures, etc.

PENNSYLVANIA TURNPIKE COMMISSION
Harrisburg, Pennsylvania
NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania, until 10:00 A.M. (Eastern Daylight Saving Time), the 31st day of August, 1949, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, Second Floor Building, State Capitol, Harrisburg, Pennsylvania, and immediately publicly opened and read aloud, for the following contract and of contracts:

For construction of grading, drainage, structures, and paving of Turnpike Section 24B, part of the Philadelphia Extension, in Brecknock Township, Lancaster County and Caernarvon Township in Berks County, Commonwealth of Pennsylvania. This section being situated as follows:

Beginning at a point approximately 300 feet West of Township Road 823 in Brecknock Township at Turnpike Station 1500+00 (Lancaster County) thence in an Easterly direction 32,932 feet to a point approximately 85 feet East of Township Road 300, in Caernarvon Township at Turnpike Station 2+00 on (Berks County) a distance of approximately 6.43 miles.

The approximate quantities of the principal items are as follows:

Class I Excavation	737,000 cubic yards
Class II Excavation	27,500 cubic yards
Borrow Excavation	5,000 cubic yards
Reinforced Concrete Pavement	192,300 square yards
Class A Concrete	1,870 cubic yards
Class B Concrete	4,730 cubic yards
Plain Steel Bars	57,5000 pounds
Fabricated Structural Steel	1,189,000 pounds

For construction of grading, drainage, structures, and paving of Turnpike Section 24B, part of the Philadelphia Extension, in Caernarvon Township, Berks County and West Nantmeal Township in Chester County, Commonwealth of Pennsylvania. This section being situated as follows:

Beginning at a point approximately 85 feet East of Township Road 306 in Caernarvon Township at Turnpike Station 200+0 (Berks County) thence in an Easterly direction 20,974 feet to a point approximately 731 feet West of Legislative Route 15144 in West Nantmeal Township at Turnpike Station 142+0 (Chester County) a distance of approximately 3.80 miles.

The approximate quantities of the principal items are as follow:

Class I Excavation	582,000 cubic yards
Class II Excavation	17,800 cubic yards
Reinforced Concrete Pavement	106,000 square yards
Class A Concrete	2,800 cubic yards
Class B Concrete	4,500 cubic yards
Plain Steel Bars	756,000 pounds
Fabricated Structural Steel	1,168,000 pounds

For construction of grading, drainage, structures, and paving of Turnpike Section 27A, part of the Philadelphia Extension, in West Nantmeal, East Nantmeal and Wallace Townships, Chester County, Commonwealth of Pennsylvania. This section being situated as follows:

Beginning at a point approximately 731 feet West of Legislative Route 15144 in West Nantmeal Township at Turnpike Station 142+0 (Chester County) thence in an Easterly direction 24,414 feet to a point approximately 800 feet East of Township Road 424 in Wallace Township at Turnpike Station 386+14.00 (Chester County) a distance of approximately 4.62 miles.

The approximate quantities of the principal items are as follows:

Class I Excavation	651,000 cubic yards
Class II Excavation	20,000 cubic yards
Borrow Excavation	245,000 cubic yards
Reinforced Concrete Pavement	130,000 square yards
Class A Concrete	650 cubic yards
Class B Concrete	3,600 cubic yards
Plain Steel Bars	322,000 pounds
Fabricated Structural Steel	542,000 pounds

Copies of plans, specifications and other contract documents, including cross-sections, are on file and open to public inspection at the offices of the Pennsylvania Turnpike Commission located at Harrisburg, Pennsylvania, on 17 August 1949. Copies of cross-sections may be purchased from the Pennsylvania Turnpike Commission for the sum of Fifty Dollars ($50.00) per set, for each section.

Specifications and contract documents, exclusive of cross-sections, may be obtained from the Commission upon deposit of Ten Dollars ($10.00) for each set, such deposits to be refunded in full to any actual bidder upon return of such documents in good condition within five (5) days after the date of the opening of the bids. Refund will be made for all plans, contract documents and cross-sections returned, if the project is withdrawn from letting by the Pennsylvania Turnpike Commission. Remittances are payable to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and cross-sections.

The Pennsylvania Turnpike Commission reserves the right to award each section as a separate contract and or in any combination of contracts.

The character and amount of bid security to be furnished by bidder is stated in the Instructions to Bidders.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE COMMISSION
James E. Torrance
Secretary and Treasurer
Harrisburg, Pennsylvania
August1949

SUB BIDS WANTED

For clearing and snagging approximately 6.5 miles, of ox-bow cut-off of Steele Bayou, near Vicksburg, Mississippi. Interested parties contact Inland Construction Co., Inc., P. O. Box 507, Rossdale, Mississippi. Telephone 13. (278)

Bids: August 24, 1949 (295)

State Road Work

STATE DEPARTMENT OF PUBLIC WORKS
BUREAU OF CONTRACTS & ACCOUNTS
ALBANY, NEW YORK

Sealed proposals will be received by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., until ten-thirty o'Clock a.m., advanced standard time, on Wednesday, August 24, 1949, for projects in the following counties:

County	Deposit plans	Bid deposit	Type	Miles	Engineer's estimate
Fulton	$5	$3,000	Asph. Conc. Opt. Bit. Mac. Appl.	1.99	$71,000
Cayuga	5	3,000	Reinforced Concrete Pave.	1.27	59,000
*Seneca & Cayuga	10	40,000	9" Conc. Conc. Pavt. 24' 28' wide =1.94 Mi. Asph. Conc. Opt. = 0.43 Mi. 250' Sp. Thru 4th App. Alpha I-Beams 2 @ 45' & 2 @ 75' Alpha =$126.00	1.47	704,000
*Wayne	10	55,000	9" Conc. Conc. Pavt. 24' 30' wide. Alpha I-Beam 57' Sp. RR Sep. Alpha I-Beam 5 Sp. 370.2' Total RR. Sep. Alpha =$298.00	0.67	958,000
Ontario	10	22,000	Asp. Conc. Tp. 2A =0.78 Mi. 8" Cem. Conc. Pavt. (Widen) = 0.06 Mi.	0.84	379,000
Ontario	10	55,000	Asp. Conc. Tp. 2-A	1.79	933,000
*Ontario	10	48,000	9" Cem. Conc. Pavt. 24' wide Alpha Plate Girder 2 Sp. 102' 7½" & 74' 7½" Alpha I-Beam 2 Sp. 70' Each Alpha =$309.00	2.54	822,000
*Erie	10	65,000	Grading & Structs. = 0.53 Mi. 9" Cem. Conc. Pavt. 40' 54' wide = 0.41 Mi. 4 Sp. Alpha I-Beam 2 @ 60' & 2 @ 40' 4 Sp. Alpha I-Beam 2 @ 44' & 2 @ 66' 4 Sp. Alpha I-Beam 2 @ 49' 4" & 2 @ 74' Alpha =$1498	3.08	179,000
Dutchess	5	4,000	8" Cem. Conc. Pavt. 22' Wide	0.34	72,000
Orange	5	10,000	Dble. Surf. Treat. Gravel Found	3.08	179,000
Bronx	20	130,000	Conc. Grad. & Structures 2 Sp. Rig. Frame 63' 5½" & 62' 1½". Reinf. Conc. arch 63' 10¼". Reinf. Conc. Ellip. Arch 94'	0.51	2,420,000
Suffolk	20	50,000	9" Cem. Conc. Pavt. 2 @ 25' & 0.73 Mi. 9" Cem. Conc. Pavt. Var. Width = 10.18 Mi. Misc. Work =0.41 Mi.	11.02	933,000
Suffolk	20	30,000	8" Cem. Conc. Pavt. 2 @ 25' & Var. Width=9.87 Mi. Asp. Conc. Opt. = 0.41 Mi. Misc. Work = 0.03 Mi. Rig. Frame 44' 8¼" Rig. Frame 2 Sp. @ 46' 9" Ea.	1.31	562,000

DISTRICT No. 2
R. F. Hall, District Engineer, 444 Van Duzee St., Watertown, N. Y.

Lewis D49-1 Detour for the Asphalt Lyons Falls — Conc. Opt. Construction Std.	1.03	$1,100	$21,000
		Plans $5	

No. 4-2

* These projects involve the use of Alpha Composite Construction which is patented and the royalty is as follows:

Seneca & Cayuga	$126.00
Wayne	298.90
Ontario	1498.00
Erie	1498.00

Maps, plans, specifications, and estimates may be obtained at the office of the Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers in whose district the roads are located. The name and address of the District Engineers will be furnished on request.

Plans may be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract costing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and in the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

H. D. TALLAMY
SUPT. OF PUBLIC WORKS
(Continued on page 123)

SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.20 cents a line, minimum 4 lines. To figure advance payment count 5 average words as a line.
INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.00 a line an insertion.

INFORMATION.
BOX NUMBERS care publication New York, Chicago or San Francisco offices count as 1 line additional in undisplayed ads.
DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:
The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured 7/8 inch vertically on one column, 3 columns—30 inches—to a page. E.N.R.

NEW ADVERTISEMENTS received by August 16th appear in August 25th issue subject to limitation of space available.

POSITION AVAILABLE

Civil Engineer, 35 to 45 years old to supervise project engineers on building work, waste disposal and general civil engineering design for chemical company located in East. Furnish detailed resume of experience and education, also salary requirement, in reply.

P-9634, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

WANTED—ENGINEERS, Architects, Draftsmen experienced in the design of sewage treatment plants, water treatment plants and industrial buildings. Also engineers to supervise construction. State qualifications, experience. Salary requirements and date available. P-1165, Engineering News-Record.

ENGINEER EXPERIENCED industrial and power plant construction about four years in field plus two or three in design and drafting. Opportunity for one who knows construction responsibilities both office and job and likes them. Degree not essential. Northern Ohio City location. P-9471, Engineering News-Record.

ESTIMATOR EXPERIENCED quantity surveyman and project manager. Virginia-Carolina area. P-9549, Engineering News-Record.

SUPERINTENDENT EXPERIENCED in private and public buildings. Virginia-Carolina area. Give full experience, references and salary expected. P-9550, Engineering News-Record.

WANTED EXPERIENCED structural steel draftsman, location Oklahoma. Reply P-9547, Engineering News-Record.

ENGINEER SECRETARY: The New England Interstate Water Pollution Control Commission will receive application for the position Secretary of the Commission. Applicant must be professional Engineer versed in water pollution control. Salary $8,000.00. Applications should be mailed to Walter J. Shea, 225 State Office Bldg., Prov., R. I. Give age, education, experience and references.

ESTIMATOR—FOR General Building Contractor. We need two men who are qualified to prepare quantity surveys covering items like excavation, concrete, forms, brick work, tile partitions, glazed tile, carpentry, etc. Knowledge of pricing not necessary. We figure only building projects running over $5,000,000.00 mostly hospital construction. Will pay top salary for qualified men. Only experienced, high type men considered. Write in confidence giving education, experience, age, salary desired, when available. Fletcher Engineering and Construction Co., P. O. Box 62, Kensington Station, Buffalo, New York.

ENGINEER, CIVIL experienced in drafting, surveying, quantity estimating and field supervision. Write P. O. Box 755, Langley Field, Va.

BOOKKEEPER, EXPERIENCED in preparation statements, tax matters, etc., for general contractor. Write P. O. Box 2240, Norfolk, Va.

WANTED: AN experienced Engineer for a City of 22,000 population, salary $4,000.00. Address: Carl E. Pratt, Sr., Mayor, Hastings, Nebraska.

WANTED: REINFORCED concrete designer. Experienced on industrial buildings. Permanent position. Apply by letter stating age, experience, education and salary desired. R. W. Mavcets, 52 W. Jackson Blvd., Chicago 4, Ill.

RESEARCH DIRECTOR

wanted by one of our clients manufacturing building materials, to initiate and administer a markedly expanded research program emphasizing new product development and engineered applications. Experience in research planning and administration, and some familiarity with or related to the building industry is desired. Submit qualifications, a detailed account of experience, and salary requirements to:

30 Memorial Drive ARTHUR D. LITTLE, INC. Cambridge 42, Mass.

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (29 years behind it standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N.Y.

POSITIONS VACANT

WANTED — CONSTRUCTION Superintendent —To take complete charge of job, out of town work, must have thorough public works experience.—Submit brief digest of experience, salary expected. P-9648, Engineering News-Record.

UNUSUAL OPPORTUNITY — Graduate Civil Engineer, age 35 or under, wanted for responsible permanent position with large manufacturer of surveying and drafting instruments and associated equipment and supplies located in Chicago. Must have ability to quickly understand products of the type indicated and write accurate catalog descriptions, instruction sheets, use and care information, etc. Previous technical writing experience desirable but not necessary. Salary $3800 to $5000, depending upon length of training required. Box 9674, Engineering News-Record.

WANTED—RECENT C.E. graduate for engineering field service low cost road construction. Highway experience desirable. Small mid-west territory. Excellent opportunity for national organization. P-9615, Engineering News-Record.

POSITIONS WANTED

PILOT WITH requirements—4300 flying hours. Desires permanent position. Will answer all requests. Owen C. Jones, 48415 Ford Road, Plymouth, Michigan.

CIVIL ENGINEER. Master's in structural. Married. Desires connection with firm engaged in industrial building—location immaterial. PW-9428, Engineering News-Record.

CONSTRUCTION EXECUTIVE, experience with nation-wide chemical company, desires position in charge of construction and non-process maintenance work. PW-9494, Engineering News-Record.

CONCRETE FOREMAN, 28 years experience in concrete field. Aggregate, batch and crushing plants, 200 to 900 yds. placing and handling. Foreign position desired. PW-9474, Engineering News-Record.

CONSTRUCTION AND Maintenance Engineer. C.E. graduate. Broad experience in design, construction, maintenance, contracting, purchasing, etc., all types of commercial and industrial buildings. Former contractor, good business background. Speaks Spanish. Wishes position here or Latin America. PW-9589, Engineering News-Record.

STRUCTURAL DESIGN Engineer, graduate and registered—age 39 married, 12 years responsible engineering experience, covering structural design and preparation of plans for nationally known architects, engineers and builders, for commercial industrial and institutional structures. Can furnish A-1 references. PW-9585, Engineering News-Record.

SEWAGE DISPOSAL PLANT OPERATOR
WANTED

With broad experience and ability to operate and take complete charge of a 125 m.g.d. modified aeration plant, (salary $6640-$7440 per year). Job will be filled after non-assembled competitive examination. Applications must be filed on required form before September 9, 1949. For further information write:

Civil Service Commission
Room 875, City Hall Philadelphia 7, Pa.

DRAFTSMAN-CHIEF
Structural Steel Fabricating Shop

One capable of directing force of twenty men. Must be thoroughly experienced in modern shop methods. This company has been in business 30 years. Offices air conditioned. Steady work assured to right man.

THE MARYLAND STEEL PRODUCTS CO.
P. O. Box 1997 Baltimore 3, Md.

POSITIONS WANTED

DRAFTSMAN GENERAL, good structural. Also machinist, millwright and licensed embalmer. Want foreign work. PW-9579, Engineering News-Record.

ENGINEER-GRADUATE—Married-Veteran. 3 years experience in structural and civil engineering; desires connection with contractor in Chicago area. PW-9636, Engineering News-Record.

LL.B.-TRAINED with a liberal arts (journalism) background. This unusual background will pay quicker dividends than the usual junior engineer. Married, 30, six years field experience as surveyor, construction engineer, and assistant resident. Willingly go Foreign. PW-9625, Engineering News-Record.

CIVIL ENGINEER, Graduate, Registered, age 34, 12 years experience-construction, maintenance and administration. Interested in opportunity where engineering education and experience can be utilized, location Midwest or South. PW-9592, Engineering News-Record.

CONSTRUCTION SUPERINTENDENT — 28 years in complete charge of Projects for general contractors. Consisting of: Dirt and Concrete dikes and dams, Flood Walls, Pumping stations, paving, bridges, sewers, sewage disposal, water treatment and industrial plants, power houses and coffer dams. At present in charge of paving project. Married and will go anywhere. Available soon. PW-9632, Engineering News-Record.

A COURSE OF INSTRUCTION BY MAIL IN
STRUCTURAL ENGINEERING
Thirty-ninth Year
OUR COURSES HAVE HELPED THOUSANDS
to pass State Boards — to better positions
A—Public Works Structures. C—Special Course (State Board Exams.)
B—Architectural Engineering. D—Structural Engineering (complete).
E—Preparatory Course
Monthly payments permissible. Information sent without obligation. WRITE TODAY
WILSON ENGINEERING CORPORATION
College House Offices • Harvard Square • Cambridge, Mass., U. S. A.

DIRECTOR OF PLANNING, CHIEF ENGINEER OR PROJECT MANAGER AVAILABLE
Accustomed to organizing and progressing work faster, at lower cost and with greater profits than original estimates. Thoroughly experienced in all phases of planning, programming, budgeting, design and construction of Expressways, Parkways, Highways and other municipal projects. Also, in conducting negotiations and maintaining goodwill with public officials.
PW-9527, Engineering News-Record
330 West 42nd Street, New York 18, N. Y.

POSITIONS WANTED

SALES AND Service Engineer wishes to locate with reliable manufacturer, distributor or dealer of construction equipment. Twelve years experience in selling, operating and servicing shovels and bulldozers. Five years experience in general contracting. No objection to travel or working hours. My requests are for good future with chance for advancement and fair pay. References gladly furnished. PW-9672, Engineering News-Record.

SUPERINTENDENT, 25 years experience in installation, operating and consultant in layout of large plants as follows: Stone, sand, gravel, conveying, crushing and screening plants. Apprentice machinist and mechanical engineering by trade. Good organizer and a cost getter. Can give best of references. PW-9651, Engineering News-Record.

ESTIMATOR AND Supervisor of construction with Civil Engineering degree desires position with aggressive contractor, preferably in south or southwest. PW-9670, Engineering News-Record.

CIVIL ENGINEER—grad., 27, married, 2 yrs. exp. quantity take-off, field layout, etc. for hvy constr. contractor. Comm. pilot's license. West or West Coast preferred. PW-9637, Engineering News-Record.

ASS'T. SUPT. 25—C.E. Grad. 2 yrs. office and field experience heavy constr. supervised excav., foundation, super structure. Did layout work. Desires position as ass't supt., gen. foreman or similar position in field. PW-9635, Engineering News-Record.

EQUIPMENT SUPERINTENDENT; master mechanic, 25 years experience heavy construction, large spreads, 15 yrs. foreign experience, can be equipment consultant. Prefers foreign work—anywhere. Harbors, airports, railroads, roads, industrial plants, etc. PW-9673, Engineering News-Record.

STRUCTURAL ENGINEER—registered Indiana and Michigan, other registrations pending. Thirteen years Structural Engineering and Architectural experience includes power plants—commercial and industrial structures—stores and homes. Will consider working on fee—hourly-partnership-or salary basis. Write PW-9627, Engineering News-Record.

CONSTRUCTION ENGINEER, graduate civil, licensed, age 36, married. Experience construction supervisor in all phases of heavy and light construction both office and field, including cost estimating. Prefer south or west. Will consider foreign employment. PW-9624, Engineering News-Record.

STRUCTURAL ENGINEER, college graduate, licensed, 25 years designing and estimating experience industrial buildings, municipal incinerators, silos, heavy foundations, hydraulic structures, wants permanent connection in New York City or Northern New Jersey. PW-9650, Engineering News-Record.

CIVIL ENGINEER, graduate, age 28, single, 5 yrs. engr. exp. Desires position as college instructor. PW-9651, Engineering News-Record.

SUPERVISION OR Management position—Varied background in supervision of industrial construction. Commercial pilot. Will supply four-passenger plane. Prefer South or Southwest. PW-9669, Engineering News-Record.

CONTRACTORS' FIELD Engineer, 25 yrs. experience in laying-out everything from property line to fin. Grading on all sorts of jobs, export and cross-sections both field and office. Some knowledge of drafting, computing and taking off quantities. PW-9626, Engineering News-Record.

PART TIME WORK WANTED

STRUCTURAL ENGINEER, registered, 25 years buildings, foundations, docks, tunnels, indeterminate structures, etc. PTWW-9583, Engineering News-Record.

PATENT ATTORNEY

Patent Practice
before U. S. Patent Office. Validity and infringement investigations and opinions. Booklet and form "Evidence of Conception" forwarded upon request. Lancaster, Allwine & Rommell, Registered Patent Attorneys, Suite 434, 815-15th Street, N.W., Washington 5, D.C.

Building Construction Cost Data
1949 (7th) Edition
A 90-page booklet of tabulated construction costs revised as of January 1949. 1400 items alphabetically arranged and broken down for labor and material. Concise, Comprehensive, *Up-to-date, Handy.* $2.50 Postpaid.
R. S. MEANS
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SQUARES AND LOGARITHMS TO 170 FT.
24° TABLES OF CO-ORDINATES AND SLOPES.
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Latest Edition now available. Includes Trigonometric functions, logarithms of numbers, Hip & Valley Roof Formulae and Graphics. Bound as Complete volume or separate volumes.
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When answering the classified advertisements in this magazine, don't forget to put the box number on your envelope. It's our only means of identifying the advertisement you are answering.

LEARN TO ESTIMATE
Today, more than ever before, you must know how to analyze building costs. If you want to become a successful builder, learn how to prepare a correct estimate in a hurry. Get in on the profitable work now available wherever you turn. Your success is assured if your estimates are right; otherwise you are licked before you start.

The Tamblyn System of Estimating will make a real estimator out of you in a few weeks of your spare time. We are so sure that you will want to learn it, that we will send you our complete home study course for ten days examination absolutely free. If you don't think it is the finest thing you ever saw, just return it and it won't cost you a cent. If you like it and want it, send us $8.75 when 10 days are up and $7.50 per month until $38.75 is paid.

This estimating system is based on forty years of actual construction experience. It has been sold all over the world for more than twenty years. Thousands of estimators and contractors swear by it. Our offer isn't hot air and big talk. We don't give you a diploma or a lapel button, but we do teach you down to earth estimating which will bring you profitable business.

Just send your name and address today, and we will mail you the complete course at once for your approval.

TAMBLYN SYSTEM
1115 So. Pearl St., E-322
Denver, Colo.

Napoleon once said
"An Army Marches on Its Stomach"
We Have Fed Millions
KANE INDUSTRIAL SERVICE
Industrial Feeding.
Labor Camps.
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30 Years' Experience in the Housing and Feeding of Men for Satisfied Clients.
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OFFERS

AIR COMPRESSORS

Worthington two-stage, water cooled, vertical 250#, 60 CFM, new condition.
Gardner-Denver, 105 foot, with air receiver, hose reel, driven by power take-off and mounted 1941 Ford.
Gardner-Denver air-cooled 105 foot with receiver, V-Belt driven from power take-off and mounted on 1942 Ford chassis with Wood two-yard dump body.
Gardner-Denver 2-stage 160 ft., skid Mtd.
Worthington 210 cubic foot, two-stage air-cooled, on steel wheels, Hercules diesel.
Chicago Pneumatic 210 cubic foot, two-stage, air-cooled, Caterpillar diesel on four rubber tired wheels.
Gardner-Denver 315 cu. ft. two-stage, skid mounted, Murphy four-cylinder diesel.
Pennsylvania 12" x 10" class 3A single cylinder, 355 cubic foot P.D., flat belt driven, 50 HP slip ring motor.

QUARRY EQUIPMENT & BINS

New 16 x 16 double clamshell gates.
20" x 6'6" Belt Type Magnetic Separator.
Link-Belt style 146 vertical centrifugal discharge bucket elevator, belt type, fully enclosed, extendable to 65'.
3018 Cedarapids roller bearing roll crusher, new condition, new warranty, used as demonstrator only.
18 x 36 Farrell deep jaw crusher, with McLanahan 3' x 7' roll type feeder.
10 x 36 Cedarapids, practically new.
10 x 20 Champion #4½ prim. jaw crusher.
10 x 7 Allis Chal. Blake type jaw crusher.
Williams 20-S pulverizer.
Cedarapids No. 1 Kubit.
100 ton 3 compartment storage or aggregate bin with or without batcher and scales.
60 ton 2 compartment storage bin with clam shell gates.

ELECTRIC MOTORS

New & Rebuilt—All Sizes
3 to 125 HP in stock
Open and Totally Enclosed

TRUCKS—TRAILERS

1½-ton Ford & Chevrolet.
2½-ton GMC, New and rebuilt.
Sterling COE Model 255GCS tandem drive tractor, 9.00x24 tires, 200 HP Cummins supercharged diesel, excellent condition.
40-ton Rogers low bed equipment trailer, 16—7.50x20 tires, airbrakes, outriggers, excellent condition.
Van Trailers with 17' x 7'8" x 6' bodies. Five ton capacity.
2,000 gallon tanks on semi-trailer mounting.
New and rebuilt dump bodies.

GASOLINE AND DIESEL ENGINES

New JXD Hercules Gasoline.
Buda, Hercules, Hill diesels, rebuilt.
New Murphy 4 and 6 cylinder diesels.
GM 6 and 12 cylinder diesels, practically new.

SHOVEL ATTACHMENT

Lorain 30A chain crowd, LBS#5142, 16' boom 13'4" stick ½-yd dipper.
Lorain 40 Hi-Lift, 25' boom 19'8" stick LBS #5877, new ¾-yd dipper LBS#7750.
P&H 203A, LBS#2527, 19'6" boom 13' stick ⅜-yd dipper.
Bucyrus-Erie 30B tunnel front 9' stick 1½-yd dipper LBS#3392.
Koehring 502 with necessary parts to convert from crane to shovel, 21' boom 16' stick 1¼-yd dipper.

BACKHOE ATTACHMENT

Lorain 41 backhoe, LBS#5429, with 18' boom, 7' stick, 36" cutting width Amsco bucket. Will fit any ¾-yd Lorain with serial number over 9,000.

DRAGLINE FAIRLEADS

New Osgood ½-yd Model 200.

BACKHOE BUCKETS

¾-yd Lorain, 40, LBS#6105, 44" cutting width, teeth, sheave.
27" outside width drop bottom type LBS #1033, good condition.
26" outside width solid bottom type LBS #4377, good condition.

NEW TAGLINES

McCaffrey Model 648 for 1¼ to 2-yd crane.
McCaffrey Model 636 for ¾-yd to 1-yd crane.

SHOVEL DIPPERS

Bucyrus-Erie 20B, ¾-yd LBS#3801.
Lorain 41, ¾-yd, LBS #7433, new condition.
New Lima 1-yd, Amsco, LBS#2295.
Bucyrus-Erie 1¼-yd gas air, LBS#3782, fair.
Lorain 75 manganese 1¼-yd, LBS#7233, teeth and bail.
Lorain 75B, 1¼-yd extended lip, 1¾-yd LBS#2260.
Pettibone-Mulliken 2-yd Lorain 82 or 820, manganese, LBS#5361.
Pettibone-Mulliken 2-yd for 3500 Manitowac LBS#5763.

CONCRETE ROAD BUILDING & MISCELLANEOUS CONCRETE HANDLING EQUIPMENT

Pavers & Mixers

Ransome 34E dual drum, new October, 1943, with 36'9" boom, 1000 gallon auxiliary water tank, Cummins engine, rebuilt.
Jaeger Model 14DL, non-tilt mixer, rebuilt.

Concrete Finishers

Jaeger type "L" double screed, 10½'-12½', rebuilt.
Heltzel 10'-12' finisher, rebuilt.
Blaw-Knox gas-electric 10½'-12½', rebuilt.
2 Koehring 10'-12', rebuilt.
Koehring 10'-16' finisher, rebuilt.

Concrete Spreaders

Blaw-Knox type SA 10'-15' spreader, new 1943. New condition.

Concrete Road Forms

830'—Truscon 7"x8" forms, with stakes.
1380'—Heltzel 7"x8" forms, with stakes.
1300'—Blaw-Knox 8"x8" forms, with stakes.
4450—Heltzel 9"x8" forms, with stakes.
1430'—Heltzel 10"x8" forms, with stakes.
1010'—Blaw-Knox 10"x8" forms, with stakes.

Fine Grade Machines

Flynn surgrader 10'-12', rebuilt.
R.B. Fine Grader for 21' width, rebuilt.

Form Graders—2 of each

Cleveland formgrader, new condition.
Carr formgrader, new 1944, rebuilt.

BELT CONVEYORS

New 18"—24"—30"—36"
- "Sealed-for-life" idlers
- Lattice or channel frame
- Shipment from stock depending on length

CLAM—DRAG—SCRAPER BUCKETS

GRADERS

Caterpillar 44 hydraulically operated drawn grader, 12' blade, wt. 8,300 lbs.
York Corporation Model SR drawn grader with scarifier, 8' blade, rakes, pneumatics, wt. 7,900 lbs.

DIESEL POWERED TRACTORS

"FD" Cletrac with Buckeye blade and double drum P.C.U.

DIESEL GENERATORS

7½ KW to 125 KW. Alternating and direct current.

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1000 KW TO 100 KW STATIONARY AND PORTABLE

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FOR SALE or RENT ALL LATE MODELS

1—N. W. Shovel, 2½ c.y. new Oct. 1946

1—N. W. Shovel, 1½ c.y.-new April 1946

1—P & H Dragline, 1½ c.y., new June 1948

1—N. W. Shovel, ¾ c.y. Diesel, Backhoe —40' Crane, Dragline, new Aug. 1948

1—Allis Chalmers Tractor Model HD19H, new May 1948

5—D W 10's—used 2500 hours

1—Caterpillar Auto Patrol #12—9K4626

1—Caterpillar D8 Angledozer #8R8933

1—Caterpillar D7 Bulldozer 4T5988

WILLIAMS CONSTRUCTION CO.
Box 145, Middle River, Baltimore 20, Md.
Phone: Essex 1310

CONSTRUCTION EQUIPMENT

NEW SURPLUS and USED

1—**CRANE**, Colby Hammerhead, 300' Span, 12½ ton, 440 volt, 3 phase, 60 cycle electric Motor.
1—**SHOVEL**, Lorain 75B Crawler, 1¾ cu. yd., Waukesha Gas Engine. (Rebuilt).
1—**DERRICK**, American 70-ton Stiffleg, complete with 250-30 Hoist, gas engine, controls, wire rope & fittings. (Unused Surplus).
1—**DERRICK**, Eichlay 20-ton Stiffleg, complete with Clyde 3-drum, 9 x 10 Steam Hoist with Swinger, on 2-drum Electric Hoist with Swinger.
3—**MIXERS**, T. L. Smith, 4 cu. yd. Tilting Type with 75 HP Electric Motors.
2—**HOISTS**, Clyde 8¾ x 10, 3-drum Steam, equipped with 60 HP Dutton Vertical Boilers. (Unused Surplus).
3—**PILE HAMMERS**, McKiernan-Terry 9B3, 1600 lb. ram.
1—**PILE HAMMER**, McKiernan-Terry 11B3, 8000 lb. ram.
3—**PILE HAMMERS**, Vulcan 50C, Double Acting, 5000 lb. ram.
2—**PILE HAMMERS**, Vulcan 2-I, Single Acting, 5000 lb. ram.

COAST EQUIPMENT COMPANY
948 BRYANT ST. SAN FRANCISCO 1, CALIF.

FOR SALE

One or more at $300 each:

New Army Surplus cable operated bulldozer blades for Caterpillar Model D-7s, complete with front A frame with built-in radiator guard, trunnion mounts and all necessary parts to put on a bare Tractor.

SACRIFICE

2—Reconditioned late Model D-8 Caterpillar Tractors, 8R Series, equipped with DDPCU's and cable operated angledozer blades. $12,000 each or will lease.

DANBURY MOTOR EXCHANGE
P. O. Box 1017, Danbury, Conn.
Phone: 2344 or 3240

SURPLUS BARGAINS

1—15 KW International Diesel Generator 120-240 v 60c radiator, instruments like new . . . $1600
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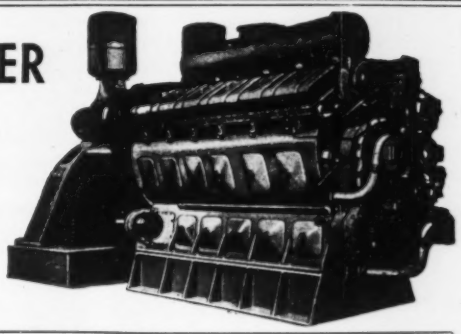

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Screens,—many sizes
1-4 with Hough loader
Universal truck hoe
3300# wrecking ball

or rent.—15 current model Bay City cranes, shovels and backhoes.

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REBUILT CATERPILLAR DIESEL ENGINES

1—D-13000 Caterpillar Power Unit $3,400.00
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1—D-3415 Caterpillar Diesel Generator Set, 15 K.W. $2,100.00
1—Case Model DE Rebuilt Engine $450.00

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Philadelphia 29, Penna.
Phone—SAgamore 2-3020

FOR SALE

Barber-Green, asphalt maintenance Plant 10-20 ton—Bucyrus-Erie, model 41-B, steam crawler Crane—3/8 to 2½ yd. crawler crane, diesel or gas power—3 to 6 yd. Draglines, Walker type and crawler Locomotive — Gantry — Hammerhead Cranes — Lorain 75 shovel front attachment — Koehring, model 301, shovel front attachment—Bucyrus-Erie, built 1949, 1½ yd. crane dragline.

STONE the CRANE MAN
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FOR SALE

7—Terra Cobra Scrapers, 150-HP Cummins engines. These machines new 1946-1947. Less than one year work. Latest Improvements including cabs, 12-c.f. air compressors and 24-V generators, drive chains enclosed. All overhauled and appearance like new. Will sell in lot or separately.

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Terms can be arranged

Address
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424 Endicott Bldg. St. Paul, Minn.

FOR SALE

One (1) Caterpillar 1948 D-8 Tractor with Caterpillar straight dozer and Caterpillar D.D.P.C.U. serial no. 2-U-4581, 2500 hrs. Condit.on excellent. $13,000.00.

One (1) International Model T-9 (gasoline) Crawler Tractor, equipped with Hough 1 yard front end loader: under 2000 hours, condition excellent. Price, $4000.00.

GEORGE E. JOHNSON
512 No. 17th Lincoln, Nebraska
Phone 2-3000 - 2-2034

FOR SALE
Ransome 34-E Dual Drum Paver

Serial #12147, engine #323771. Excellent condition, ready to go to work. Located at Saginaw, Michigan.

PRICE . . . $8,000.00
(f.o.b.) Car

EARLE EQUIPMENT CO.
6331 Tireman Ave. Detroit 4, Mich.
Phone: Texas 42100

FOR SALE

1—Blaw-Knox Concrete Spreader
1—Blaw-Knox Concrete Finisher with Tamper
1—Johnson Float Finisher
1—Rex 34E Double Drum Paver

All of the above are in excellent working condition and can be bought at an extremely attractive figure. Write, phone or wire

STANDARD STEEL CORPORATION
5001 South Boyle Ave., Los Angeles, Calif.

FOR SALE—MODEL 42B BUCYRUS ERIE STEAM PILE DRIVER

Serial #11200

Equipped with 60 ft. leads and 60 ft. boom. Completely rebuilt with oil burner. Boiler certificate issued on same.

FS-9643, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

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Scoopmobiles & Buggymobiles

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Nos. 0, 1, 2 Vulcan Pile Hammers and Driving Rigs
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All sizes Pile Hammers & Extractors for Rent

Regardless of location of your job, wire or write

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"WE BUY STEEL PILING FOR CASH"

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Bearing Piles BP 14 x 102, 80 ft. lengths
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STEEL SHEET PILING and H-BEARING PILING

Large tonnage new "H" Beams for sale at mill price, f.o.b. Detroit. Also considerable tonnage of M-115 and "Z" sheet piling offered.

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Birmingham Theatre Bldg.
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New & Used

Priced for quick sale. Approximately 700 tons. Available immediately at Portsmouth, Ohio.

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CRANES & LOCOMOTIVES

100 ton Baldwin diesel elec. locomotive 660 HP. New 1942.
100 ton Alco diesel elec. locomotive built 1939. 660 HP.
35 ton Ohio Type G locomotive cranes built 1943. Buda engine.
50 ton Whitcomb diesel elec. locomotive new 1942. First class shape.

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1—½ yd. Page Dragline Bucket R.H. New
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1—80D Northwest Diesel Shovel
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1—30-ton Plymouth Std. Ga. Gasoline Loco. 1943

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PIPE SIZES
⅛" to 24" standard weight, extra heavy-hydraulic (limited stocks up to 60")

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SPEEDCRANES

LATE MODELS

Manitowoc Diesel Powered Speedcranes for rent. 25, 40 and 50 ton capacities with booms 100' or more, 20' and 30' jibs. Special price on long rentals.

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CAST IRON PRESSURE PIPE FITTINGS and VALVES

ALL Sizes, and Kinds—Bell and Spigot—Bell and Bell—and Flanged Ends. Also Cast Iron Soil Pipe and Fittings—Cast Iron Culvert Pipe

— IMMEDIATE DELIVERY —

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Rebuilt Northwest Model 25 Truck Crane mounted on 10-wheel Mack complete with outriggers.

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VALVES and FITTINGS
All Sizes in Stock
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GREENPOINT IRON & PIPE CO., INC.
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5900 feet of new Keasbey & Mattison 8 inch Class 150 asbestos cement pipe. F. O. B. Ionia, Michigan.

RAYMOND COON, CLERK
City of Ionia Ionia, Michigan

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FOR RENT

New and almost new Manitowoc Speedcranes

60 ton—2½ cu. yd. capacity Combination cranes, dragline and clamshells, caterpillar mounted—diesel powered. Reply

FR-8967, Engineering News-Record
330 West 42nd Street, New York 18, N. Y.

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1600 pr 90 RA 5" C. 60 pr 90 RA 6" C.
300 pr 90 RA 5½" C. 300 pr 75 ASCE 4½" C.

W. H. DYER CO., INC
1859-X Railway Exchange Bldg.
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SWITCH TO BUMPER

SPECIAL OFFERING
We Offer
50,000 Good Used Creosoted Cross Ties
Immediate shipment

MORRISON RAILWAY SUPPLY CORP.
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LORAIN Mod. 79 SHOVEL

1½ cy capacity, also 60' Crane, Caterpillar Diesel engine, completely rebuilt, in A1 condition like new.

BENDIX MACHINERY CO., INC.
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All sizes and weights. Also frogs, switches, spikes, bolts, tie plates, contractors' and mine equipment carried in stock.

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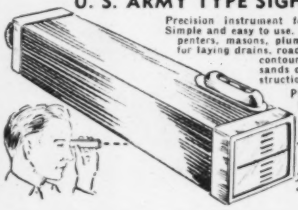
QUICK ACCURATE SIGHTS with U. S. ARMY TYPE SIGHTING LEVEL



Precision instrument for preliminary survey. Simple and easy to use. Ideal for builders, carpenters, masons, plumbers, contractors, etc., for laying drains, road building, foundations, contour farming, has thousands of uses. Comes with instructions.

PRICED LOW $1.85 EA. Ship. Chg. 15¢ Ext. Ea.

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OUR $7.50 VALUE $1.85 Ship. Chg. 15¢ Ext.

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Fully equipped modern shop—all makes and models repaired — all work guaranteed — instruments rented

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WORLD'S FINEST SURVEYING INSTRUMENTS
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FOR SALE

2 Koehring Gantrys Convertible to Caterpillars

FS-9630, Engineering News-Record
330 W. 42nd Street, New York 18, N. Y.

BULLDOZERS

FOR SALE OR RENT —also trade-in

2—International TD 14 Hydr. Bulldozers 1947 model
1—International TD-18 - 1948 with hydraulic dozer like new
1—Caterpillar D-7 Hydr. late model
1—International TD-18 with cable bulldozer, completely rebuilt, excellent 1948 model

BENDIX MACHINERY CO., INC.
401 Broadway, New York 13 Tel: Canal 6-5693

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12 YARD DRAGLINE BUCKET

Excellent condition, medium weight, made by ESCO Price $2800.00 F.O.B. Yuma, Arizona, subject to inspection.

GRAFE-CALLAHAN CONSTRUCTION CO.
714 West Olympic Blvd., Los Angeles 15, Calif.

WANTED

Compressors Wanted

STATIONARY - PORTABLE
LARGE OR SMALL

L. W. BAUER
22 Bursett Street Bloomfield, N. J.

WANTED

SIX STEEL TRUSSES 75 ft.

SPAN MUST BE GOOD CONDITION

Write or wire

JACKSON MACHINERY CO.
P.O. Box 5288 "B". New Orleans 15, La.

WANTED

Used No. 1 Warrington-Vulcan single acting steam pile driving hammer. Also 60' to 70' leads for this hammer for attachment to crawler crane. Also a plain type driving head to accommodate 17" or 18" round concrete piles.

Write P. O. Box 755, Langley Field, Va.

WANTED

BACKHOE

for Bay City Model 45

R. B. Gardiner Construction Co.
Storrs, Conn.

"Opportunity" Advertising:
Think
"SEARCHLIGHT"
First

OFFICIAL PROPOSALS

U. S. Government
(Continued from page 112)

General Services Administration, Public Buildings Administration, Washington, D. C., Aug. 3, 1949—Sealed bids in duplicate for the construction of the Veterans Regional Office Building (except elevators and ash hoist) at Columbia, South Carolina, will be received until 2:00 P.M., Eastern Standard Time, on Thursday, Sept. 15, 1949, then publicly opened in the Office of the Custodian, U. S. Court House, Columbia, South Carolina. Bid guarantee is required. U. S. Standard Form No. 23, Construction Contract, will be used and performance and payment bonds will be required. Upon request one set of Prebid Documents and 2 sets of drawings and specifications will be supplied without charge to each general contractor interested in bidding on the complete project, all of which must be returned. Additional sets of drawings and specifications may be obtained by general contractors at a charge of $15.00 per set, which will not be refunded. Checks offered as payment must be made payable to the order of the Treasurer, U. S. Upon request and in the discretion of the undersigned one set of drawings and specifications will be furnished to builders' exchanges, chambers of commerce and other similar organizations, with the understanding that the set will be retained on their premises and made available for inspection by any interested sub-contractor or material firm. Bidding material may be obtained at Room No. 507, Lemon Building, 1729 New York Ave., N. W., Washington 25, D. C. Phone EXecutive 4900, Extension 2297. W. E. Reynolds, Commissioner of Public Buildings, General Services Administration. (136)

OFFICIAL PROPOSALS

Bids: September 1, 1949 (292)

Construction of Perimeter & Filtration Plant Fences

July 29, 1949

Subject: NOTICE OF ADVERTISING FOR BIDS FOR CONSTRUCTION OF PERIMETER AND FILTRATION PLANT FENCES, OAK RIDGE, ANDERSON COUNTY, TENNESSEE.

To: Prospective Bidders and Others concerned:

1. On August 2, 1949, Roane-Anderson Company, an Agent for and on behalf of the United States of America under Contract No. W-7401-eng-115, will issue invitations for bids for Construction of Perimeter and Filtration Plant Fences.

2. The work consists of furnishing all labor, tools, equipment and materials and performing all work (except work specified to be performed by others) required to complete the construction of Perimeter and Filtration Plant Fences and all operations necessary to erect approximately forty nine thousand two hundred (49,200) lineal feet of chain link fence and eight (8) 12'-0" single leaf swing type, hand operated gates. Work shall include all necessary excavation, clearing and grading and the removal of approximately two (2) miles eight hundred (2,800) lineal feet of woven and barbed wire fences. Also furnish and install one entrance assembly at Blair Gate, including two (2) 10-ft. swing type gates, at railroad entrances, two (2) 14-ft. and one (1) 12-ft. swing type gates at highway entrances. All in strict accordance with the specifications and drawings together with such incidental work at the site within the intent and meaning of the specifications.

3. All bids will be considered not only on the basis of the lowest bid but on the applicable experience, financial assets, integrity of the bidder and his ability to obtain equipment and employees. The Roane-Anderson Company, as Agent aforesaid, reserves the right to reject any and all bids and to waive any informality in bids received, and to accept or reject any item of any bid, unless such bid is qualified by specific limitation. However, all accepted items will be awarded as a whole to one bidder.

4. Bids will be received until 2:00 p.m. (EST) September 1, 1949 and then publicly opened. Seventy-five (75) calendar days will be allowed for the completion of the work.

5. Request for plans and specifications should be made to Roane-Anderson Company, Attention: F. C. Feld, Assistant Chief Purchasing Agent, Purchasing Department, P. O. Box 456, Oak Ridge, Tennessee, and should be accompanied by a Postal Money Order or a certified check payable to the order of Roane-Anderson Company in the sum of $5.00 which deposit will be refunded after the plans and specifications have been returned in good condition.

6. For additional information address the above mentioned, or telephone F. C. Feld, through Knoxville 4-3387, extension 24 or 25, or Oak Ridge 5-4361, extension 24 or 25.

ROANE-ANDERSON COMPANY, AS AGENT FOR AND ON BEHALF OF THE UNITED STATES OF AMERICA

OFFICIAL PROPOSALS

Bids: September 1, 1949 (314)

Outerbridge Crossing

THE PORT OF NEW YORK AUTHORITY
FIELD OFFICE
CONTRACT AK-3

Sealed proposals for the construction of the Field Office of the Outerbridge Crossing in Tottenville, Staten Island, New York, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 11:30 A.M., Thursday, September 1, 1949, at which time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer of the Authority, and copies will be furnished upon deposit of $10.00 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman,
Chairman.

New York, August 18, 1949

Bids: September 7, 1949 (308)

Garbage and Refuse Incinerator

(125-Ton Capacity)

SALISBURY, MARYLAND

SEALED PROPOSALS will be received at the City Hall, Salisbury, Maryland by the Salisbury Incinerator and Sewage Treatment Plant Commission until 2:00 P.M. (E.D.T.) on September 7, 1949, for furnishing all necessary labor, materials and equipment and performing all work for the construction of a 125-ton incinerator plant and appurtenances for the City of Salisbury, Maryland.

Copies of the contract documents, plans and specifications may be examined at the office of the Mayor and Council of Salisbury or the Commission, located in the City Hall, Salisbury, Maryland, or may be obtained at the office of Clarke Gardner, Consulting Engineer, 109 Calvert Street, Salisbury, Maryland, upon deposit of $20.00 for the initial set and $10.00 for each additional set of documents. The original deposit of $20.00 will be refunded in full to all bona fide bidders upon the return of documents within thirty (30) days after filing a bid. Refunds on additional sets of contract documents will be made on the basis of fifty per cent (50%) of the deposit providing documents are returned in good order within sixty (60) days after date of receiving bids.

Each proposal must be accompanied by a certified check or a properly prepared

OFFICIAL PROPOSALS

bid bond satisfactory to the Commission in the amount of five (5) per cent of the total bid.

No bidder may withdraw his bid within thirty (30) days after the actual date of the bid opening as hereinbefore specified.

All proposals must be submitted in sealed envelope addressed to the Salisbury Incinerator and Sewage Treatment Plant Commission, City Hall, Salisbury, Maryland and plainly endorsed on the outside of the envelope as "Bid for Construction of Garbage and Refuse Incinerator, Salisbury, Maryland".

All work under this contract must be completed within three hundred consecutive calendar days from the date of the order to proceed.

A surety bond by a company satisfactory to the Commission and in an amount not less than one hundred (100) per cent of the contract price will be required from the successful bidder.

The Commission reserves the right to consider informal any bid not prepared and submitted in accordance with the provisions of the specifications and contract documents and may waive any informalities in or reject any and all bids.

SALISBURY INCINERATOR & SEWAGE TREATMENT PLANT COMMISSION
Fred A. Grier, Jr., Chairman
Henry W. Roberts, Vice-Chairman

Bids: August 23, 1949 (290)

Filtration Plant & Reservoirs

WASHINGTON SUBURBAN SANITARY COMMISSION

CONTRACT NO. 663-W

ADDITIONAL FILTRATION PLANT UNIT AND TWO FILTERED WATER RESERVOIRS
WILLIS SCHOOL FILTRATION PLANT

Sealed proposals for furnishing and erecting, on foundations prepared by others, an additional filtration plant unit of 11.12 Mgd rating and two filtered water reservoirs, of 2.15 Mg and 2.84 Mg capacities, respectively, will be received at the office of the Washington Suburban Sanitary Commission, Hamilton Street, Hyattsville, Maryland, until Tuesday, August 23, 1949 at 1:00 P. M., Eastern Daylight Saving Time, at which place and time they will be publicly opened and read.

Plans and specifications may be obtained from the office of the Chief Engineer of the Commission, Hyattsville, Maryland, upon deposit of $10.00, which deposit will be returned to bidders or to those returning plans and specifications in good condition.

Dwight B. Galt
Warren Browning
Leland G. Worthington
Commissioners

Bids August 31, 1949 (288)

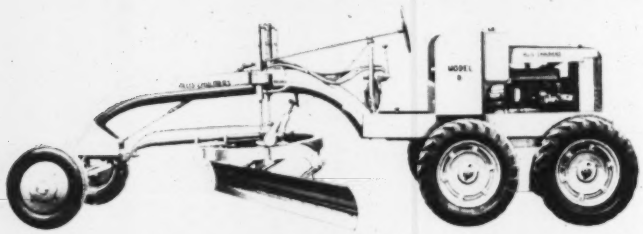
16-Inch Cast Iron Submarine Pipe

Long Island Water Corporation
733 Sunrise Highway
Lynbrook, L. I., New York

Bids will be received up to 2:00 P. M. August 31, 1949 for laying approximately 1000 linear feet of 16-inch flexible-jointed cast iron pipe across Reynold's Channel between Beach 2nd Street, Lawrence, and 7th Street, Atlantic Beach. Pipe is to have 1 foot of sand and 3 feet of stone cover. Type of joint is "Utilex", thickness ⅞ inch, weight per 12-foot length approximately 2200 lbs. Owner will furnish pipe.

Plans and Specifications may be obtained at a charge of $10 at the office of the Long Island Water Corporation and may be seen at the office of Thos. H. Wiggin, Consulting Engineer, 20 Broad Street, New York 4, New York.

NEW PRODUCTS



Light-Duty Motor Grader Features Tandem Rear-Wheel Drive

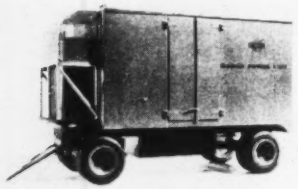
New 34.7-hp. motor grader features tandem rear-wheel drive, tubular frame design, and rear-mounted engine-transmission construction for improved visibility. Engineered for low cost maintenance and light construction work, it has a weight of 8,500 lb. Features of the Model D grader include short turning radius, maneuverability, quick, accurate blade control, and speeds of up to 18.61 mph. It is equipped with the standard Allis-Chalmers Roll-Away moldboard which rolls the dirt away from the blade, and an arched front axle which permits capacity loads to pass through without disturbing the rolling action of the load. Hydraulic lift, side shift and seven pitch positions facilitate handling and enable the operator to do exact work with a minimum of effort. Locating the engine and transmission in the rear provides more weight and hence more traction for the tandem drive wheels. For soft soil conditions, where flotation is important, 7.50-20 front tires are available. Accessory equipment includes a scarifier, loader, all-view cab and a specially designed snow plow.—Allis Chalmers Mfg. Co., Tractor Division, Box 512, Milwaukee 1, Wis.

Powered Concrete Truck

Small concrete truck will handle 14 cubic feet of concrete at speeds up to 15 mph. Mounted on 6.00 x 9 pneumatic tires, it is powered by a Wisconsin gasoline engine. Dimensions are: 6 feet 11 inches long, 42 inches wide, 51 inch wheelbase, and 32 inch tread. It will carry a load of 3,000 pounds. Weight of the Concrete-Truk is 1,425 pounds.—Monroe Sales Corp., 333 Midland Ave., Detroit 3, Mich.

Midget Air Hoist

A midget single-drum utility hoist is designed for a variety of hoisting, skidding and hauling jobs. The BU hoist will lift a 600-pound load at 50 fpm. Heavier loads may be handled by the use of proper sheave blocks. Power is supplied by a reversible four-cylinder radial piston-type air motor. A wide band-type brake gives positive holding power while the reversible motor permits lowering the load under power. A clutch lever permits disengaging the drum for quick pulling out of the cable. The BU hoist is 18¼ in. long, 10¾ in. wide, 11¾ in. high, and weighs 72 pounds.—Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.



Mobile 100-Kw Power Unit

Mobile power unit is powered by a Waukesha diesel engine, and is mounted on an 8-wheel 2-axle Fruehauf trailer. The generator is a 125 kva, 100 kw, revolving-field-type with top-mounted V-belt-driven exciter. Standard voltages include 120/208; or 480-volt 60-cycle 3-phase 3 or 4-wire. A gasoline-engine-starter is standard equipment, with an electric starter available at no extra cost.—Sinex Projects, Inc., 40 Wall St., New York 5, N. Y.

Chrome-Clad Chain Tape

The Super Hi-Way chrome clad drag or chain tape is made from a tough, flexible, spring-tempered steel. It is heavily chrome plated and has jet-black lines and figures which are deeply etched in. The chrome-plated non glare surface is said to not chip, crack or peel and to resist corrosion, wear and tear. The Super Hi-Way tapes have a marking at 2 ft. 4½ in. from zero—one half standard railroad gage. Improved clips are riveted to the line with reinforcing strips to help avoid end-of-line breakage. The tapes are supplied with two leather thongs. The Lufkin tapes are available with three types of graduations and numbering. All are available in 100, 200 or 300-ft. lengths, and when specified, are encased in a metal reel.—Lufkin Rule Co., Hess Ave., Saginaw, Mich.

Brushless Paint Striper

A light-duty paint striper, featuring brushless gravity feed, is available in two models. The shoe-type paint spreader is made of steel and is designed to roll the paint evenly over the entire width of the stripe. Spreaders are furnished in widths of 2 to 8 in. and are interchangeable. A distributing apron receives the paint from the gravity line and feeds it evenly to the finger rollers which spread it on the pavement or floor. It can be used on concrete, asphalt, wood, macadam, or other surface which is reasonably smooth. Since no pressure is required, there is no need for an engine, compressor or pump. The spreader is offset, giving the op-

(*Continued on page 126*)

Safeguards Digestion with BYERS WROUGHT IRON PIPE

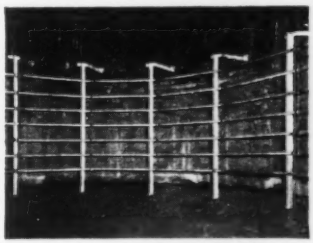
In the attractively landscaped sewage treatment facilities of the Aurora (Illinois) Sanitary District, the designers used a proven means of avoiding maintenance difficulties in the sludge digester tanks. The heating coils were fabricated of Byers Wrought Iron—an engineering favorite for this important and punishing service.

In this application, the natural corrosive properties of the sludge are aggravated by the heating; authorities have estimated that the corrosion rate doubles for each 20° F increase in temperature. Furthermore, sludge tends to collect on the surface of the heating coils, where it decomposes and liberates very aggressive compounds.

Obviously, the only safeguard against premature failure and excessive repairs is to use a corrosion-resistive material. As a review of the specifications of modern plants will show, wrought iron has been utilized in a large number of installations. This widespread and continued use is the best index of its durability and dependability.

There's a definite reason why wrought iron stands up longer in severe services like this. The tiny fibers of glass-like silicate slag, threaded through the body of high-purity iron, halt and diffuse corrosive attack. This discourages the pitting and penetration that causes vulnerable materials to fail. These fibers also anchor the initial protective scale, which shields the underlying metal—just as a scab protects a wound.

If you are concerned with the design of a new plant, or with the maintenance of an existing plant, you will find some helpful information in our bulletin, WROUGHT IRON FOR SEWAGE TREATMENT AND DISPOSAL INSTALLATIONS. It illustrates and describes many of the more than fifty applications where wrought iron is successfully serving in modern plants. May we send you a copy?



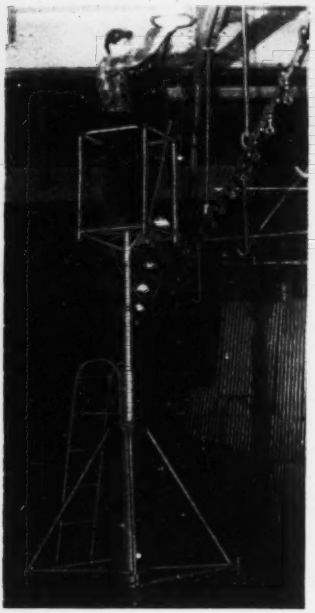
Typical installation of Byers Wrought Iron pipe in heating coils of a sludge digestion tank.

A. M. Byers Co., Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, Salt Lake City, Seattle, San Francisco. Export Division: New York, N. Y.

CORROSION COSTS YOU MORE THAN WROUGHT IRON

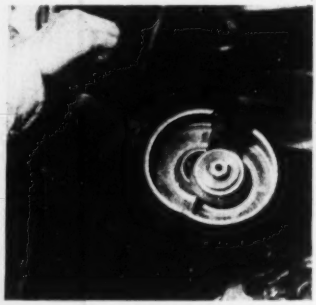
BYERS
GENUINE WROUGHT IRON
TUBULAR AND HOT ROLLED PRODUCTS
ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

erator a clear view of the line while the machine is in operation. Model A has a 9-gal. tank with a funnel-shaped bottom, cast-aluminum alloy wheels and a weight of 67 lb. It is 47 in. long, 24 in. wide, and 38 in. high. Model B is similar in design but has a 5-gal. tank.—Universal Marine & Mfg. Corp., 137 Alexander St., Yonkers 2, N. Y.



Rolling Maintenance Tower

Hydraulically raised work tower is operated manually by one person from a work platform. The Safway Hydro-Lift can be set at any level from 7 to 17 ft. above the floor. This makes it easy for most workers to reach equipment as high as 25 ft. An integral tubular-steel ladder with hand rails provides easy access to the work platform when in its retracted position. The platform is raised on a telescoping arm by means of hydraulic power. Manual movement of a lever on the platform operates the hydraulic pump. A toggle on the pump mechanism releases the hydraulic pressure permitting lowering by gravity of the platform. A sturdy guard rail, 2 ft. 9 in. in height, protects the worker while on the platform. The Hydro-Lift stands on a broad, stable base measuring 4 ft. 3 in. square. The base is mounted on swiveling 5-in. casters with rubber tires. When in the working position, the tower is held by means of a positive safety brake on each caster which locks both wheel and swivel.—Safway Steel Products, Inc., 6228 W. State St., Milwaukee 13, Wis.



Buffer Drums

A new-type buffer drum for use with polishing and buffing abrasives in endless belt form has been developed. Standard-width abrasives are wrapped around the drum and secured into place by pins that recede out of the way when the cone washer is tightened down. Of the split-drum type, the hands of the drum are locked into a solid drum by a cone-type washer. The Cone-Loc drum sander is cushioned with rubber and is adaptable for use with flexible shaft or stationary arbors. It is available in sizes from 6¼ to 12 in. dia. and various standard widths and bores. A 6¼-in. felt-cushioned sander is also available. —American Diamond Saw Co., 519 N.W. Park Ave., Portland 9, Ore.

Air-Cooled Gasoline Engines

Three new models of four-cycle air-cooled gasoline engines have ratings from 2 to 8 hp. Equipped with Magnametic ignition system to produce high voltage at low speeds. Enclosed adjustable governor, operating in oil, provides improved speed regulation. New vacuum breather and spring-loaded oil seals prevent oil leaks. Snap-on oil filler cap eliminates necessity for wrench when adding or changing oil. A starter rope or a hand crank, or both, can be furnished.—Briggs & Stratton Corp., 2711 N. 13th, Milwaukee, Wis.

Closed Diaphragm Pump

Capacity of the Rex 4-inch closed-diaphragm pump is rated at 6,000 gph with a 10-foot suction lift. The 440-pound diaphragm is quickly changed—the pump is opened scissor-fashion and four wedges knocked out. The pump is powered by a 3½-hp air-cooled motor. The unit can be mounted on steel or pneumatic wheels. The crank arm is equipped with needle bearings and a safety shear pin designed to protect the gears and power unit in case of abnormal overloads or severe clogging.—Chain Belt Co. of Milwaukee, 1633 W. Bruce St., Milwaukee 4, Wis.

Complete Collimation Service

Establishment of a complete collimator department for testing divided circles of assembled theodolites and surveying instruments is announced by W. & L. E. Gurley. Six collimators, with telescopic lenses focused on infinity, have been placed at strategic intervals around a center post on which the transit is mounted. Focusing the transit on any collimator is equivalent to sighting a star. Azimuths are accurately determined by revolving the transits and sighting through each of the six collimators. —W. & L. E. Gurley, Troy, N. Y.

Protective Coating

New resin material is recommended for lining wood tanks and for protecting concrete floors. It has a resistance to acids, alkalis, and solvents at temperatures as high as 325-degrees F. Carbo-Flex consists of a liquid and powder which when mixed have a mortar-like consistency, and is applied by a trowel. It can be applied to vertical surfaces in layers of about ⅛ inch without sagging. When set, the material is hard, waterproof and impervious to most corrosives and solvents except nitric or sulfuric acids having over 45 percent concentrations. It solidifies in from 2 to 20 hours. Compressive strength is about 10,000 psi.—Carboline Co., 7603 Forsyth Blvd., St. Louis 5, Mo.

Welding Regulators

New single-stage welding regulators, for oxygen and acetylene, which equal the performance of most two-stage regulators are now in production. They are the yoke type. They give maximum safety, assure positive delivery of oxygen and acetylene at correct pressures without creep, and hold the secondary pressure while tank pressure falls. A ball-pivoting lower-spring-rest assures permanently friction-free operation. Also O-rings between yoke and diaphragm and between body and bonnet seal and cushion the diaphragm. Special design guides the jet to disk so it always seats at exactly the same location.—C. A. Norgren Co., 222 Santa Fe Drive, Denver 9, Colo.

Manufacturers' Publications

Metal Lath; Steel Building Products—Product description and information on USG metal lath and steel building products are contained in a new 12-page catalog. This catalog contains information on how to apply laths, how to estimate quantities, and miscellaneous information on tie and hanger wire, lathing nails, and hot-rolled vs. cold-rolled channels. In addition to describing the complete USG line of laths, Catalog ML-20 also lists Truss-steel studs, metal arches, triple-vent basement sash and screens, aluminum louvers, and coal doors.—United States Gypsum Co., 300 W. Adams St., Chicago 6, Ill.

Transite Pressure Pipe—"Engineering Facts about Transite Pressure Pipe" is a 12-page booklet just released. It presents informative data about this asbestos-cement pipe, covering such facts as its carrying capacity, tight, flexible joints, long-life expectancy, and similar subjects. Photographs and text give documented answers to several questions asked about the pipe. The booklet has tables of Transite pipe weights and dimensions.—Johns-Manville, 22 E. 40th St., New York 16, N. Y.

Improved Hand Level—Pocket-sized folder contains information on the improved Brunson hand level. A cutaway drawing, indexed to a parts list is used to describe the construction of this level. Detailed instructions are provided on how to use the instrument, as well as how to clean and adjust it.—Charles Bruning Co., Inc., 4754 Montrose Ave., Chicago 41, Ill.

Protective Coating—Folder gives facts about general all-purpose aluminum protective coating. Protection and maintenance of steel surfaces of all types where a hard-drying, aluminum colored, non-removable coating is required. It is designed specifically for outdoor weathering but can be used in interiors where an aluminum decorative coat is needed. No-Ox-Id Aluminum Protective Coating gives excellent heat resistance and can be applied to heated surfaces.—Dearborn Chemical Co., 310 So. Michigan Ave., Chicago 4, Ill.

Elevated Water Tanks—A 4-page leaflet describes the newly designed Watersphere, an elevated water tank of welded-steel construction. It consists of a spherical tank—supported on a single, cylindrical column—which has a graceful, curved shape from top to bottom. The Watersphere is built in capacities from 25,000 to 250,000 gal. The new design is available in standard sizes from 25,000 to 100,000 gals. capacity in heights of 50, 75, 100 and 125 ft. Special designs are available.—Chicago Bridge & Iron Co., Chicago, Ill.

Catalog on H-Piles—Information on dimensions and properties of H-piles is contained in Catalog No. 223. Data included in this 102-page catalog cover characteristics, safe loads and design data, how to drive and driving formulas, load tests and test data, general specifications for H-piling, life expectancy of H-piles, designs of installations where H-piles were used, etc. The catalog contains illustrations, drawings, and charts used to amplify on the text matter.—Bethlehem Steel Co., Bethlehem, Pa.

Grouting Equipment—Equipment for pressure grouting by the Weber system is described in a 4-page bulletin just issued. This catalog describes the type of work which can be performed by pressure grouting, describes the method employed and the equipment used, and contains other pertinent information. The catalog is illustrated with photographs of several jobs completed by the company.—The Pressc-rete Co., Inc., 243 Graybar Bldg., New York 17, N. Y.

Hoisting Equipment—Sixteen-page catalog describes a complete line of hoisting equipment including gas, electric, and hand-powered derricks, hoists, and winches; contractors' material elevators and hoisting equipment; swing-stage scaffold winches; and truck derricks. Also listed are snatch blocks, sheaves, iron-strapped wood blocks, oval steel blocks, hooks, clamps, and tongs, and other accessory equipment.—Sasgen Derrick Co., 3101-27 Grand Ave., Chicago 22, Ill.

Welding Equipment—Catalog No. 140 serves as a comprehensive guide for the welder. It covers every type of equipment necessary for all acetylene and oxygen operations. The catalog contains more than 150 illustrations. Each piece of equipment is described in detail.—Modern Engineering Co., Dept. 120, 3415 W. Pine Blvd., St. Louis 3, Mo.

Casters in all Styles—Caster catalog contains 12 pages of descriptions and illustrations of the Rapistan line of flame-hardened and steel-forged casters and wheels. Published in two colors, catalog WGC-49 lists metal, plastic, and rubber wheels; roller and oil-ite-type bearings; and casters ranging from heavy-duty Aircrafter steel-forged series, with capacity load ratings of 2,500 pounds, to the Scout formed-steel caster series, with capacity load ratings of 250 pounds.—The Rapids-Standard Co., Inc., Dept. WC-166, 342 Rapistan Bldg., Grand Rapids 2, Mich.

Tools for FWD Trucks—Helpful hints on how to remove and install gears, bearings, shafts, pulleys, skeins, sprockets, collars, flanges, pinions, bearing outer races, and other tight-fitting parts on Four-Wheel-Drive trucks are illustrated and described in the new OTC Bulletin No. FWD-49. These tools are universal in scope, and can be used on other makes of trucks and equipment.—Owatonna Tool Co., 350 Cedar St., Owatonna, Minn.

Heavy-Duty Motor Trucks—Big broadside describes the GMC line of heavy-duty trucks. Detailed specifications are presented for the H Series 520, 600, 620, and 650 trucks. Specifications cover the gross vehicle weights, engines, chassis, axles, standard equipment, tires, etc. Color drawings are used to show typical uses for the H Series of GMC trucks—General Motors Corp., GMC Truck & Coach Div., Pontiac, Mich.

Six Wheelers in Action—Is the title of a descriptive 24-page booklet. It dramatizes the ever-growing importance of 6-wheel trucks, and contains more than 60 on-the-job photographs. It features a description of the diversified uses of six wheelers. Text matter is confined almost exclusively to the two-page introduction. This introduction contains essential information on 6-wheel trucks and their advantages and history.—The Timken-Detroit Axle Co., 100 Clark Ave., Detroit 32, Mich.

Worm-Feed Stokers—Bulletin S-41 contains eight pages of information on the Type F Worm-Feed stoker. Featured in the bulletin is a description of the special oil-level cup which gives warning of water in the gear case due to vapor condensation or other causes. Also described is the belt adjustment whereby the belt can be easily shifted from one pair of sheave grooves to another for changing speeds. Information is provided on the complete line which includes models in seven capacities, with three styles of retorts.—The Brownell Co., 426 N. Findlay St., Dayton 1, Ohio.

The ABC's of Induction Motors—A special 32-page issue of the E-M Synchronizer covers the basic theory, operation, characteristics, applications, and control of large induction motors. It presents a comprehensive, practical, fact-filled treatment of squirrel-cage and wound rotor motors. It is replete with photographs, cut-away drawings, and nearly 50 graphs of explanatory figures.—Electric Machinery Mfg. Co., 1331 N. E. Tyler, Minneapolis 13, Minn.

Material Handling – Among the cranes listed and described in a new 8-page catalog are electric and hand power overhead traveling cranes, single I-beam types, jib cranes, I-beam trolleys, and chain hoists. The company also offers the services of its trained factory representatives to help solve overhead materials handling problems. —Conco Engineering Works, Div. of H. D. Conkey & Co., Mendota, Ill.

Alloy-Steel Chain — Taylor-made alloy-steel chain is the feature of a 12-page bulletin. The bulletin contains complete specifications on chains in diameters from ¼ to 1¼ inches; working load limits, definitions and cautions, recommended use and details of chain service for steel chains, sling chains, and attachments.—S. G. Taylor Chain Co., Hammond, Ind.

Crane and Excavator—Information on the new Model 44 Corsair truck-mounted crane and excavator is contained in a 2-page illustrated catalog which covers complete specifications and operational data. Features described include truck speeds on the highway, tandem drive with 8- or 10-tire traction, 5½ r.p.m. swing speed, and convertibility to seven crane and excavator applications. Also included is a load capacity chart based on the machine's 10-ton, ¾-yd. capacities. — Wayne Crane Division, American Steel Dredge Co., Inc., Fort Wayne 1, Ind.

Sectional Conveyor — This eight-pager illustrates and describes the Hauss Model 487 section conveyor. The Model 487 can be used with flat belt or trough belt on any type of portable or stationary mounting. It is engineered for versatility with low-cost standardized sections of either lattice or channel-frame construction. Bulletin H-487 contains complete specifications for the basic unit, as well as the complete line of conveyor accessories. —George Hauss Mfg. Co., Inc., Div. of Pettibone Mulliken Corp., 141st St. & Park Ave., New York 51, N. Y.

Exterior Waterproofing Manual—Comprehensive and instructive manual describes exterior waterproofing of masonry using silicone water repellent. The manual contains 29 pages of information on method and amount of application, cost, and waterproofing features for users of the Crystal one-coat invisible silicone. Suggested specifications for architects and engineers are included. — Wurdack Chemical Co., 4987 Fyler Ave., St. Louis 9, Mo.

Aluminum Paint—Data sheet and application bulletin describes Heat-Rem heat-resisting aluminum paint. The bulletin lists features of Heat-Rem, describes how it is applied, lists recommended uses, and lists prices and sizes of containers in which it can be supplied.—Speco, Inc., 7308 Associate Ave., Cleveland 9, Ohio.

Aluminum Roofing—"How to Apply Kaiser Aluminum Roofing" is subject of a new folder. Sketches and text provide information and instructions for the application of corrugated aluminum roofing to new and old buildings. — Permanente Products Co., Kaiser Bldg., 1924 Broadway, Oakland 12, Calif.

Portable Compressors — Portable compressors, with gasoline or diesel power units, are the subject of a 20-page catalog. Bulletin No. 748 contains information on diesel-powered units having capacities varying from 105 to 500 cfm; gasoline powered, from 60 to315 cfm. The catalog contains detailed descriptions of the various features claimed for the CP units; contains a chart of compressor efficiency; and has a chart for use in selecting the proper size portable air compressor for a specific job.—Chicago Pneumatic Tool Co., 8 E. 44th St., New York 17, N. Y.

Two New Pump Catalogs — Two new pump catalogs describe a line of self-priming centrifugals, and vertical turbine pumps in sizes from 6 to 14 inches. Bulletin W-395-B1 illustrates four typical centrifugal pumps, and describes their advantages and recommended uses. Also listed, are tables of pumping unit and engine data. Bulletin H-450-B35 features a cutaway drawing showing how the vertical turbine pumps are constructed and how they operate. Standard specifications are listed for the complete line.—Worthington Pump & Machinery Corp., Harrison, N. J.

Gearmotors — Twelve-page catalog on Gearmotors embodied a simplified single selection table to provide easy and more accurate selection of Gearmotor sizes. Double and triple-reduction units of new design, with motor mounted concentrically in line with the output shaft, are illustrated and described. Dimensions are shown for units having open drip-proof, splash-proof, totally enclosed, and explosion-proof motor enclosures.—Link-Belt Co., 307 N. Michigan Ave., Chicago 1, Ill.

Concrete Sprayer—A one-page bulletin describes the features of the Devere Concrete Sprayer including features such as the eight spray heads, 6-ft. boom with extra nozzle for spraying edges of concrete surfaces and 50-foot hose, and single nozzle boom for spraying inaccessible areas. The bulletin contains a complete list of features, specifications, and dimensions.—Devere Co., Machine Div., Racine, Wis.

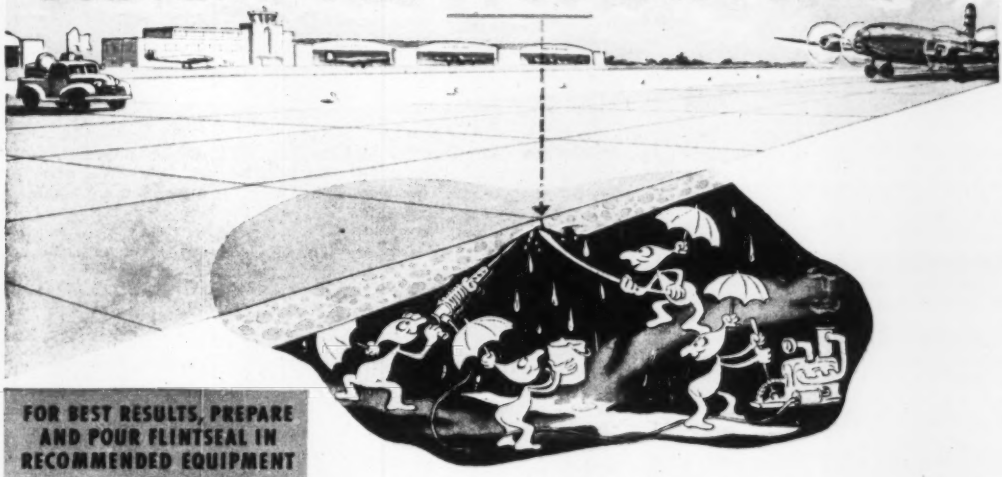
Aluminum Architectural Shapes—An attractive brochure describes extruded-aluminum architectural shapes. Items illustrated include base mouldings, window jambs and sills and exterior window sills, door frames jambs and thresholds, store front moulding and trim, decorative hand rails and utility railings, copings, ornamental trim and miscellaneous shapes. — Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky.

Rust-Inhibitive Paint—Advantages claimed for Totrust include deep penetration, high gloss, and tough weathering. Pocket-size folder describes this material in detail, and explains how it goes into rusted pits in order to inhibit rust at its source. Also explained is how, when painted over damp surfaces, it squeezes moisture to the surface through its capillary action, thus further protecting the material on which it is painted.—The Wilbur & Williams Co., Greenleaf & Leon Sts., Boston 15, Mass.

Diesel Engines—Pocket-sized booklet tells of the simplicity of design, ruggedness of construction, and the quality of materials and workmanship in Sheppard diesel engines.—Sheppard Diesel Engines, Hanover, Pa.

Fittings for Gas Transmission — Main-line fittings for gas-transmission systems are described in a 22-page catalog. Bulletin 492 features a section devoted to questions and answers covering the features and use of fittings of this type. It also contains a complete listing of each type of fitting, listing the dimensions of the angle, radius, tangent, and other dimensions for

Don't Let It Rain *Under* Your Pavement



Moisture and other foreign matter...infiltrating at the joint...play havoc with pavement. Get Positive protection with FLINTSEAL.

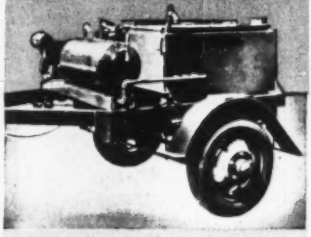
Here's a short cut to long life and low maintenance for highways, airport runways and other concrete pavement: *protect each and every joint with Flintseal.**

You'll get a smooth, neat joint that *far* outlasts old-fashioned materials. And you get a trouble-free, *positive* seal.

Why? Because Flintseal *stays* resilient. It won't flow . . . even in hottest weather. It won't become brittle and crack . . . even on the coldest days. As a result, Flintseal forms a tight, lasting bond to concrete that maintains a *positive* seal throughout repeated cycles of expansion and contraction of the slab.

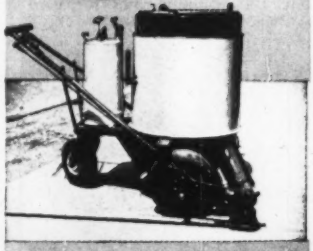
Complete information and application data on Flintseal are yours for the asking. Write, today, for your *free* copy of our latest folder on this modern, rubber-bearing, thermoplastic joint-sealing compound.

FOR BEST RESULTS, PREPARE AND POUR FLINTSEAL IN RECOMMENDED EQUIPMENT



One of the specially designed melting kettles used with Flintseal on large jobs.

This recently developed portable kettle is ideally suited to prepare the small amounts of Flintseal necessary for sealing industrial floors, steps, studio, swimming pools, driveways, roofs and the like.



A special shoe to fill and wipe the joint means that you'll get a clean, neat job with this type pouring pot. Circulating hot oil bath in the jacketed kettle keeps Flintseal at proper pouring temperature.

THE FLINTKOTE COMPANY, *Industrial Products Division*
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

ATLANTA • BOSTON • CHICAGO HEIGHTS • DETROIT • LOS ANGELES
NEW ORLEANS • WASHINGTON • TORONTO • MONTREAL

Flintseal* HOT-POURED JOINT-SEALING COMPOUND

FLINTKOTE INDUSTRIAL PRODUCTS

each. It also contains a table of representative data for high-pressure pipeline steels.—Taylor Forge & Pipe Works, Inc., P. O. Box 485, Chicago 90, Ill.

Drawing Pencils—New catalog and price list covers pencils of all types including thin-lead, thick-lead colored, colored indelible, and colored hectograph. Also described are the Staedtler's Mars-Lumograph drawing pencil, Mars-Lumograph artist pencil, and artist lead. The catalog also contains detailed listings of many types of refill leads.—J. S. Staedtler, Inc., 53 Worth St., New York, N. Y.

Crane Carriage — An illustrated folder gives a full description of a one-man, self-propelled mounting for all makes of cranes of from 10 to 25-ton capacity. Propulsive power is obtained through the travel clutches and vertical travel shaft of the crane. It is equipped with a 4-speed transmission with a speed range of 2 to 10 mph. in either direction. There is complete control of the entire machine from the operator's seat. Short turning radius. Air brakes on all wheels, hydraulic steering.—Keystone Driller Co., 419 Wood St., Pittsburgh 22, Pa.

Preformed Wire Rope — Twenty questions about preformed wire rope are interestingly and convincingly answered in a pocket-sized booklet. Another booklet, of similar format, tells about profitable drilling—shallow or deep—with wire lines for cable tool drilling.—Macwhyte Co., Kenosha, Wisc.

Motors from 1 to 20-Hp.—"The Inside Story of Allis-Chalmers 'Safety Circle' Motor Protection" is a new 8-page bulletin just released by the company. It describes the design and construction features of the "Safety Circle" motor; lists the sizes and range of capacities in which it is available; and contains a detailed description of the various advantages claimed for these electric motors.—Allis-Chalmers Mfg. Co., 1018 S. 70th St., Milwaukee, Wis.

Field Soil-Testing Apparatus — Latest brochure describes equipment for performing engineering tasks on soils in the field. Tests include both hydraulic and spring-loading types, unconfined compression apparatus, a device for extracting samples from sampling tubes or molds, and compaction equipment. The performance of field tests of foundation soils permits a rapid and convenient check on the bearing capacity of cohesive soils. Also described are triaxial, consolidation, unconfined compression, and specimen preparation apparatus for use in the soils-mechanic laboratory.—Soil Testing Services, Inc., 730 Madison St., Evanston, Ill.

Vibrating Screens—4-page bulletin points out these advantages of the Stowe vibrating screens: They leave the surface of the slab so true that it is practically finished; with a given water-cement ratio they permit a 10 percent reduction in cement, saving 30 cents a cubic yard in a roadway slab 20 ft. wide and 8 in. deep; they permit placing more than 300 cu. yd. of 8-in. slab in less than 8 hours.—Stowe Mfg. Co., Binghamton, N. Y.

Steel Forms for Concrete—How to use Atlas speed forms is discussed in a 40-page catalog. This catalog describes several projects in which the Atlas steel forms were used in the construction of walls, floors, columns, dams, manholes, and circular tanks. Information is presented on how the forms were designed for these various structures, and photographs are used to show them being erected. A data sheet contains detailed specification on the construction of the forms themselves.—Irvington Form & Tank Corp., 43 Cedar St., New York 5, N. Y.

Air Valves—A 20-page catalog tells about 21 different models of 4-way air valves. Featured is the simplified design of Gerotor air valves, containing all corrosion-resistant internal parts including bronze valve-stem guide and bronze valve lines for easy operation and long life. Large air passages assure unrestricted air flow. Four-way types can be converted to 3-way valves for operating single-acting cylinders by plugging one cylinder port in valve body. Suitable for pressure up to 150 psi., Gerotor air valves are shown in hand, foot, solenoid, cam, and pilot types. Speed control and sequence types are also listed. Five sizes are available: ¼, ⅜, ½, ¾ and 1 inch—Gerotor May Corp., Maryland Ave. and Oliver, Baltimore 3, Md.

Portable Cords and Cables—Catalog describes Super Service Neoprene-jacketed portable cords and cables for power shovels, dredges, air compressors, drills, mixers, welders, mining machines, magnetic cranes, etc. Booklet is available through sales offices located in principal cities or direct from—General Cable Corp., 420 Lexington Ave., New York 17, N. Y.

Electrical Tractor Controls—Informative booklet explains operation of LeTourneau system of electrical control. Booklet 0-215 employs cross-section and diagrammatic views to show operation and construction of component parts; and cartoon drawings to depict what happens when the electrical system is in operation. Booklet is written in easy-to-understand language.—R. G. LeTourneau, Inc., Peoria, Ill.

Powered Hole Digger—Eight-page bulletin features description of improved Williams hole digger. New features include hydraulic control for raising, lowering, and leveling; turntable bases with 270-degree turning radius; and hydraulic fore-and-aft sliding motion of approximately 18 inches. Bulletin 149-A contains complete specifications and operating charteeristics.—Hugh B. Williams Mfg. Co., 2946 Oak Lane, Dallas, Texas; or Joslyn Co., offices in principal cities.

All-Purpose Metal Framing—New way to build any type all-metal framing structure is described in 24-page catalog. Drawings show applications of each item in the Unistrut line, and photographs illustrate typical installations. Tabulated data provides information on dimensions of Unistrut fittings.—Unistrut Products Co., 1015 W. Washington Blvd., Chicago 7, Ill.

Three-Point Pipe Gage—Broadside shows how three-point pipe gage is used to determine exact size of any pipe, electrical conduit, or other circular object. Bulletin points out that gage provides exact size by which pipe or conduit is known to the trade; not by outside diameter. Gage measures pipes from ⅛ to 12 inches, inclusive.—Three-Point Industries, 3767 N. Racine Ave., Chicago 13, Ill.

Hard-Facing Guide Book—Revised edition covers applications of hard-facing alloys in heavy industry. Provides detailed information on choice and application of various hard-facing metals commonly used in heavy construction, cement plants, dredging, rock-products plants, and similar operations. Approximately 100 common uses for hard metals are described including their method of application and approximate amounts required for specific jobs.—Stoody Co., Whittier, Calif.

Butt-Joint Panel Fastener—Four-page illustrated folder describes the Roto-Lock—new butt-joint panel fastener. Applications of Roto-Locks are shown in portable shelters, scaffolding, partitions, and others. Large, dimension drawings, load rating tables, and cut-away views of the fastener in operation complete the folder.—Simmons Fastener Corp., North Broadway, Albany 1, N. Y.

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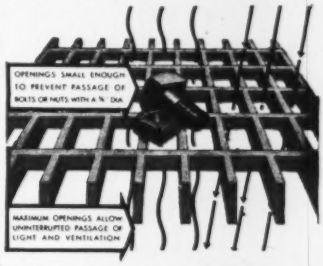
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READER COMMENT

Structural Engineer Definition

Sir: The Structural Engineers Association of Northern California as part of its public relations program recently conducted a contest among its membership for a definition of the term structural engineer. Two San Francisco structural engineers, G. A. Sedgwick and George Washington, were awarded a tie for first place in the contest. The board of judges combined the definitions submitted by these first-place prize-winners and came up with the following definition as best among those submitted:

> *A structural engineer is a specialist in the field of civil engineering whose interests, education, training and experience have developed the knowledge of scientific principles, materials, construction procedures and economics necessary to direct the design and construction of buildings, bridges, and related structures.*

We think that this is a pretty good all-inclusive definition. However, a better one can undoubtedly be written. We are particularly anxious to develop a definition satisfactory to the engineers themselves and yet understandable to the general public. We would welcome any suggestions that your readers might have.

JESSE ROSENWALD
President, Structural Engineers Association of Northern California

More on History

Sir: I was surprised and pleased to read the letter of Mr. Balog on the importance of the comprehension of history in Engineering News Record of June 9. I am an engineer myself and have lived and worked with engineers for many years, and it is my observation that most of them relax ungracefully with golf and cocktails rather than with the study of history. Twice in recent years the country has embarked on vast military, political and economic operations on the basis of a faulty interpretation of history, in other words propaganda, which would have been unsuccessful if there had been a general elementary knowledge of European political history for the last few centuries.

You would look in vain in the newspapers of this country to find the wisdom that Mr. Balog has packed into the last two paragraphs of his letter, and he is an Engineer at that.

Like Mr Balog, I do not think the factual inaccuracies of Mr. Churchill's speech matter a whit. What is terrifying is that this man, who had such a say in the direction of the world's affairs, and in particular America's, does not realize that Eastern Europe was invaded and held by so-called barbarians for centuries, because they were astute enough to take advantage of the religious and political differences of the so-called civilized Christians of Western Europe.

JOHN M. BURKE
406 N. Oxford Ave.
Los Angeles, Calif.

Civil Work of Army Engineers

Sir: The Hoover Commission's recommendation that the civil responsibilities of the Corps of Engineers for river development be transferred to the Bureau of Reclamation, if effected, should certainly result in better service at less cost as it would eliminate the present divided responsibility and the difficulty of coordinating the activities of the two agencies in those areas where their interests meet. Also, the personnel in charge of river development normally make that work their career, and the fact that more key positions could be attained by civilians would serve as an inducement to improve their proficiency.

Such a plan would undeniably eliminate the useful peace time training now being given Corps of Engineer officers in the management of large civil construction projects. However, a considerable portion of the energy of the officers now assigned duty on civil projects is spent upon matters which have but slight if any bearing upon their military proficiency. Such work includes studies of hydrology and hydraulics, flood damages, the economical value of flood protection, foundation design for dams, soil mechanics, and many other special fields. The primary benefit to the officers is that they do obtain experience in the management of large numbers of civilian employees and in the handling of large quantities of equipment and materials.

If a program could be established whereby sufficient officers could be suitably trained for the management of military construction projects without the present policy of assigning civil responsibilities to Corps of Engineer officers then it would surely be not only feasible but economical to terminate the present division of responsibility between the Corps and the Bureau of Reclamation.

It is suggested that a section of the Engineer Reserve Officers be organized from the top-grade civilian employees of those agencies of the federal government which are engaged in construction activities. The selection of individual employees should of course be subject to the approval of the proper military authority. It could be required that some established portion of the employees in certain designated positions of any given agency must accept and maintain an active commission in the above unit with a rank equivalent to their civil service rating as a prerequisite for assignment to or for holding that position. The military training of this unit of the Organized Reserves could and should be planned primarily to provide its component officers with such knowledge as is necessary to coordinate their work with other military activities and to facilitate their handling of military construction projects during emergencies.

This plan would enable the government to have available at all times a large number of expert engineers qualified for various types of work, of suitable rank and with sufficient military training for the handling of any military construction project. Divided responsibility for river development would be eliminated.

H. F. COTNER
Civil Engineer
Columbus, Ohio

Engineer-run World?

Sir: Your review of Mr. John J. O'Neill's book advocating an engineer-run world indicates that the author would apply engineering methods to the social, economic, and political affairs of humanity.

This is indeed a naive theory.

Human activity is not circumscribed by the inflexible laws that determine the conduct of concrete or steel or steam or electricity. Nor are the forces which act upon concrete and steel the same that act on humanity. What experience has the engineer in dealing with the forces of tradition, superstition, ignorance, fear, vested interest, greed, pride, passion etc. which so far have always dominated and controlled human activity? The politician who would ignore these forces or the engineer who would equate them with reason and logic would certainly have a hard time.

R. B. MCFARLANE
Structural Engineer
Richmond, Va.

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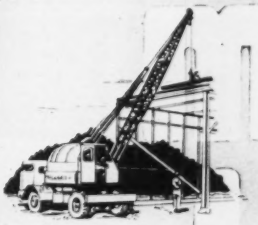

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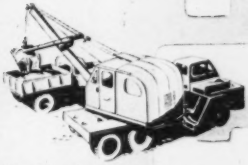

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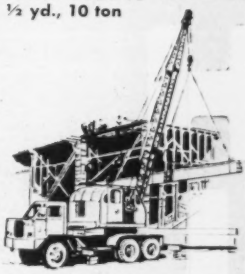

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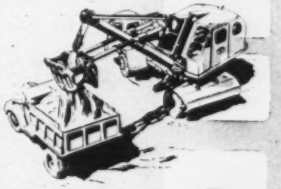

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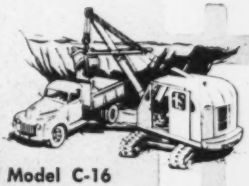

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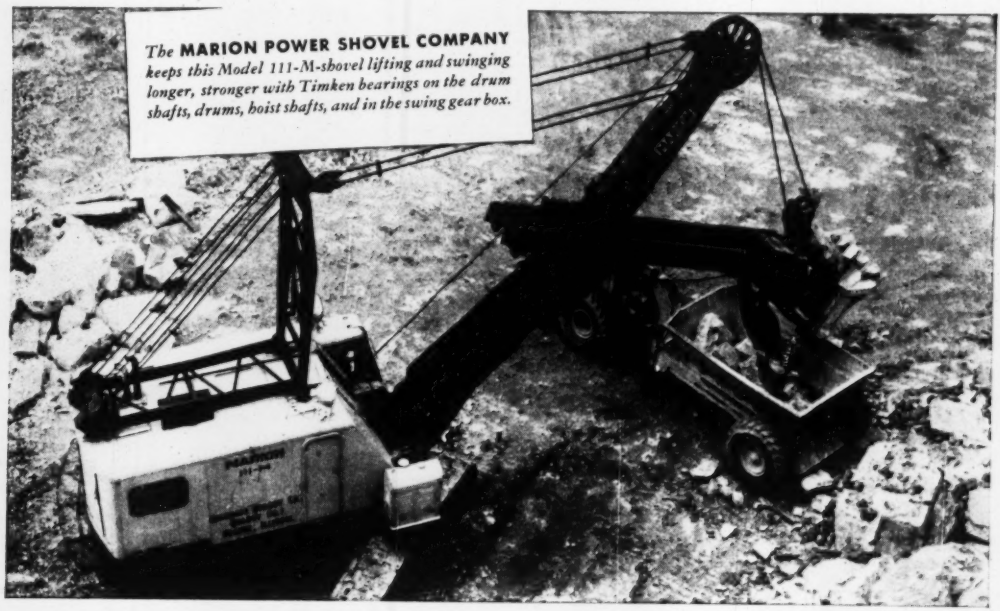

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